# *11.0 Wildlife*

The importance of military installations as wildlife habitat has long been recognized. The Sikes Act, enacted in 1960 and amended in 1997, acknowledges the military's role in conserving wildlife resources, and in providing public access to those resources consistent with the military mission.

Maintaining habitat is key to sustaining healthy wildlife populations. Over the past decade wildlife managers on federal, state and private lands have converted from single species management to habitat management, which benefits an array of species. In accordance with, the Department of Defense (DoD) Natural Resources Managers Handbook, *Conserving Biodiversity on Military Lands* (Leslie et al, 1996), Fort Belvoir has focused wildlife conservation efforts on habitat management for all species based on the use of indicator species with conservation importance. Emphasis is placed on indicator species with narrow environmental tolerances, and hence most susceptible to ecological disturbances as a practical method of measuring habitats. This eliminates the need to monitor animals with widespread distribution or those not declining in numbers. An indicator species is a key organism, plant or animal that is sensitive to particular environmental factors, so its presence in an area can provide information about ecological conditions.

Fort Belvoir's selection of indicator species was based upon (1) the recognized rarity of the species at the local, regional and national levels; (2) the availability of information regarding the species, its life history and the processes/forces influencing its rarity; (3) its susceptibility to, and immediacy of, threats; and, (4) the potential for conservation actions to be successful. Using these criteria Fort Belvoir selected four species with conservation importance to serve as "indicator species" for its wildlife conservation efforts. Since these species are typically the most sensitive to habitat conditions, improving habitats for these species will likely benefit habitat conditions for other species as well. In addition to the indicator species, there are two resident species (the bald eagle and the wood turtle) and a migratory species (the peregrine falcon) with endangered and/or threatened status, which specifically require habitat management in accordance with the Endangered Species Act, Sikes Act, and DoD and Department of the Army (DA) policies. These species share habitat requirements of the four indicator species.

The indicator species selected by Fort Belvoir are four of the Partners in Flight (PIF) priority bird species for the Mid-Atlantic Coastal Plain Region. The PIF program is an international-level conservation initiative, to which DoD and DA are signatories. USFWS, as well as state wildlife agencies, including the Virginia Department of Game and Inland Fisheries (VDGIF) through the state nongame program are also partners in this program. Designation of regional PIF priority bird species is the result of a cooperative/coordinated effort among various federal, state and private organizations.

The four indicator species selected for conservation priority use a variety of habitat types throughout Fort Belvoir for foraging and breeding. These species share habitat requirements with

many, if not all, of the other wildlife species on Fort Belvoir. Because of their shared habitat requirements, conservation actions for the seven species (e.g., four indicator and three endangered and/or threatened species) will likely benefit the installation's other wildlife species. Table 11.1 represents the habitat areas of the indicator species and provides examples of other wildlife species that share those habitats. A management strategy using indicator species is new to Fort Belvoir. The indicator species selected are subject to change using adaptive management or through the development of the Wildlife Management Plan. The indicator is associated with specific habitat types and management is implemented on those key habitats where indicator species occur. The ecological foundation for this approach assumes that the maintenance of the indicator species at desired levels concurrently means that the habitat integrity has been preserved. *(Wildlife Ecology and Management,* Second Edition, William L. Robinson and Eric G. Bolen, 1989*)*

Using indicators to manage and monitor habitats allows for efficient use of scarce program resources. Birds are good organisms for biological monitoring, because there are relatively few species, they are nearly all easily recognized, and there are large numbers of amateurs who know them well and observe them regularly. Christmas bird counts and breeding bird censuses have been carried out for many decades and are standardized. They provide excellent long-term records of patterns of distributions and abundances.

Examples included in Table 11.1 show how management of particular of successional/shrub-scrub habitat necessary for the prairie warbler (a PIF high priority bird species) will also benefit the northern fence lizard, the northern black racer, the least shrew, the American woodcock and the white tail deer. It also shows how the protection of forested wetlands necessary for the prothonotary warbler (another PIF high priority bird species) will benefit virtually all of the installation's amphibian species, the eastern mud turtle, eastern rough green snake, star-nosed mole, silver-haired bat, gray fox, as well as those species considered state/federal threatened or endangered (e.g., wood turtle, bald eagle and peregrine falcon).

The quality of the natural habitat on Fort Belvoir is reflected by the diverse wildlife documented on post. Fort Belvoir provides habitats for 43 species of mammals, 263 species of birds, 32 species of reptiles, 27 species of amphibians and 60 species of fish (Section 7).

It is important to understand that habitat for all these species are continuously susceptible to destruction, fragmentation, pollution, and threats from introduced species. This requires active management of the indicator species habitat to ensure the health of the overall ecosystem and the diversity species on Fort Belvoir. Active management includes monitoring of all indicator species, routine surveillance and response to changes in habitat conditions, buffering or accommodating development using BMPs, and controlling public access to habitat areas for recreation.

| Table 11.1: Species that Benefit from Habitat Recognized by PIF Bird Indicator Species | | | |
|---|---|---|---|
| ***Forested Wetland Habitats*** | ***Upland Forest Habitats*** | ***Open Grassland Habitats*** | ***EarlySuccessional/Shrub-Scrub Habitat*** |
| **Prothonotary warbler**<br>***Oritibitarua citrea*** | **Wood thrush**<br>***Hylocichla mustelina*** | **Field sparrow***<br>***Spizella pusilla***<br><br>**Grasshopper sparrow**<br>***Ammodramus savannarum*** | **Prairie warbler**<br>***Dendroica discolor*** |
| All amphibian species found on Fort Belvoir | Northern spring peeper (f, b, h)<br>*Pseudacris c. crucifer* | American toad (f, b)<br>*Bufo a. americanus* | Northern fence lizard (f, b)<br>*Sceloporus undulates hyacinthinus* |
| Wood turtle (f, b, h)<br>*Clemmys insculpta* | Northern ringneck snake (f, b, h)<br>*Diadophis punctatus edwardsi* | Eastern hognose snake (f, b, h)<br>*Heterodon platyrhinos* | Northern black racer (f, b, h)<br>*Coluber c. constrictor* |
| Eastern mud turtle (f, b, h)<br>*Kinosternon s. subrubrum* | Marbled salamander (f, b)<br>*Ambystoma opacum* | Meadow vole (f, b)<br>*Microtus pennsylvanicus* | Least shrew (f, b)<br>*Cryptotis parva* |
| Eastern rough green snake (f, b, h)<br>*Opheodrys a. aestivus* | Deer mouse (f, b)<br>*Peromyscus maniculatus* | Red bat (f)<br>*Lasiurus borealis* | American woodcock (f, b)<br>*Philohela minor* |
| Star-nosed mole (f, b)<br>*Condylura cristata* | Southern flying squirrel (f, b)<br>*Glaucomys volans* | Northern bobwhite quail (f, b)<br>*Colinus virginianis* | Whitetail deer (f, b)<br>*Odocoileus virginiana* |
| Silver-haired bat (b)<br>*Lasionycteris noctivagans* | Wild turkey (f, b)<br>*Meleagris gallopavo* | American kestrel (f, b)<br>*Falco sparberius* | |
| Bald eagle (f, b)<br>*Haliaeetus leucocephalus* | Longtail weasel (f, b)<br>*Mustela frenata* | Eastern cottontail (f, b)<br>*Sylvilagus floridanus* | |
| Peregrine falcon (f)<br>*Falco peregrinus* | | | |
| Gray fox (f, b)<br>*Urocyon cinereoargenteus* | | | |

Note: This information was extracted from Appendix D, Fish and Wildlife Tables. These species do occur in other habitats, but are listed in their primary habitat and need these specific habitats to maintain populations. The use of the habitat area is annotated by: f = foraging; b = breeding; and h = hibernation.

**Bold text** indicates primary indicator species

Underlined text indicates federal/state threatened or endangered species

*The field sparrow is the selected indicator species for the minimum requirements for a grassland habitat (e.g. requires 2 hectares for breeding habitat). The grasshopper sparrow is the "ideal" grassland indicator species requiring 10 hectares, but currently not found on Fort Belvoir. Implementation of the Grasslands Management Plan is expected to address more stringent habitat requirements to support the grasshopper sparrow.

## 11.1 WILDLIFE POLICIES

### 11.1.1 Federal Wildlife Policy

A number of federal statutes and directives mandate wildlife protection and management. The Sikes Act (16 USC 670a) and the Sikes Act Amendments of 1997 (Title XXIX) (together known as Sikes Act) directly regard conservation of wildlife on Department of Defense lands. TheSikes Act authorizes the Secretary of Defense to (1) carry out a program for the conservation and rehabilitation[1] of natural resources on military installations, and (2) prepare an Integrated Natural Resources Management Plan (INRMP) in cooperation with the USFWS and state fish and wildlife agencies[2]. The Sikes Act requires the INRMP to "… reflect the mutual agreement of the parties [USFWS and state fish and wildlife agencies] concerning conservation, protection, and management of fish and wildlife resources."

With regard to installation natural resources management programs, the Sikes Act states:

> "Consistent with the use of military installations to ensure the preparedness of the Armed Forces, the Secretaries of the military departments shall carry out the program required by this subsection to provide for
>
> (A) the conservation and rehabilitation of natural resources on military installations;
>
> (B) the sustainable multipurpose use of the resources, which shall include hunting, fishing, trapping, and non-consumptive uses; and
>
> (C) subject to safety requirements and military security, public access to military installations to facilitate the use."

With regard to development of INRMPs, the Sikes Act states:

> "Consistent with the use of military installations to ensure the preparedness of the Armed Forces, each integrated natural resources management plan prepared under subsection (s)
>
> (1) shall, to the extent appropriate and applicable, provide for
>
> (A) fish and wildlife management, land management, forest management and fish and wildlife-oriented recreation;

---

[1] Conservation and rehabilitation is defined as "…to utilize those methods and procedures to the maximum extent practicable on public lands subject to this subchapter consistent with any overall land use and management plans for the lands involved. Such methods and procedures shall include, but shall not be limited to, all activities associated with scientific resources management such as protection, research, census, law enforcement, habitat management, propagation, live trapping and transplantation, and regulated taking in conformance with the provisions of this subchapter."

[2] State fish and wildlife agencies are defined as "… the one or more agencies of State government that are responsible under State law for managing fish or wildlife resources."

(B) fish and wildlife habitat enhancement or modifications;

(C) wetland protection, enhancement and restoration, where necessary for support of fish, wildlife, or plants;

(D) integration of, and consistency among, the various activities conducted under the plan;

(E) establishment of specific natural resource management goals and objectives and time frames for proposed action;

(F) sustainable use by the public of natural resources to the extent that the use is not inconsistent with the needs of fish and wildlife resources;

(G) public access to the military installation that is necessary or appropriate for the use described in subparagraph (F), subject to requirements necessary to ensure safety and military security;

(H) enforcement of applicable natural resources laws (including regulations);

(I) no net loss in the capability of military installation lands to support the military mission of the installation; and

(J) such other activities as the Secretary of the military department determines appropriate ..."

With regard to implementation and enforcement of the INRMP the Sikes Act states:

"(1) neither Office of Management Budget Circular A-76 nor any successor circular thereto applies to the procurement of services that are necessary of that implementation and enforcement; and

(2) priority shall be given to entering into of contracts for the procurement of such implementation and enforcement services with Federal and State agencies having responsibility for the conservation or management of fish and wildlife."

The Sikes Act also states

"To the extent practicable using available resources, the Secretary of each military department shall ensure that sufficient numbers of professionally trained natural resources management personnel and natural resources law enforcement personnel are available and assigned responsibility to perform tasks necessary to carry out this title, including the preparation and implementation of integrated natural resources management plans."

Other federal laws and orders related to non-endangered or threatened wildlife are listed below. (Federal endangered, threatened, and rare species policies are discussed in Section 12.1.1.)

- The Fish and Wildlife Coordination Act (16 U.S. C. 661 et seq.). The Fish and Wildlife Coordination Act includes provisions for the protection and conservation of game, fur-bearing animals and fish (Chapter 5A, subchapter I).

- Lacey Act (16 U.S.C. §701) and Lacey Act Amendments of 1981 (16 U.S.C. §§3371-3378). The Lacey Act was originally passed in 1900 to aid in the restoration of game and other wild birds in parts of the United States where they have become scarce or extinct, and to regulate the introduction of American or foreign birds or animals in areas where they have not previously existed. The Lacey Act Amendments of 1981 replaces most of the provisions of the Lacey Act and prohibits the import, export, transport, sale, acquisition, receipt, or purchase of wildlife, or plants that are taken, possessed, transported or sold in violation of any federal, state, or tribal law. Also, under the Act, the purchase or sale of fish and wildlife taken or possessed in violation of foreign laws is prohibited. The Act requires that containers or packages containing fish and wildlife in commerce be plainly marked, labeled, or tagged. Violation of the provisions of the Act can result in civil and criminal penalties, cancellation of hunting and fishing licenses, and forfeiture of property.

- Migratory Bird Treaty Act (16 U.S.C. §§703-712). The Migratory Bird Treaty Act prohibits the taking, killing, or possessing of migratory birds. The Act implements various treaties and conventions concerning migratory bird protection between the United States and Canada, Mexico, Japan, and the former Soviet Union. Under the Act, it is unlawful, unless permitted by regulations, to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried, or received any migratory bird, part, nest, egg, or product, manufactured or not. The Act is enforced by the Department of the Interior employees. However, states and territories are permitted to make and enforce laws and regulations that are consistent with the Act or that give further protection to migratory birds, nests and eggs, if such laws do not extend to open seasons.

- The Migratory Bird Hunting and Conservation Stamp Act (16 U.S.C. 718-718j). The Migratory Bird Hunting and Conservation Stamp Act, also known as the Duck Stamp Act, requires waterfowl hunters who are sixteen years or older to purchase and possess a federal hunting stamp. The revenues from the sale of the stamp are collected in the Migratory Bird Conservation Fund and used for the acquisition of migratory bird refuges under the Migratory Bird Conservation Act (16 U.S.C. 715 et seq.) and for the acquisition of waterfowl production areas.

- Airborne Hunting Act (16 U.S.C. 742j-1). The Airborne Hunting Act is section 742j-1 of the Fish and Wildlife Act of 1956 (16 U.S.C. §§742 et seq.). It prohibits people in aircrafts from harassing, capturing, or killing birds, fish, and other animals, except if authorized by a permit or license. A permit or license may be issued to state or federal employees, authorized agents, or other persons for the purpose of administering or protecting land, water, wildlife, livestock, domesticated animals, human life, or crops. Violation of the Act may result in civil and criminal penalties, including imprisonment. Department of Interior employees enforce the Act and are authorized to make arrests

without warrants and to conduct warrant searches. Aircrafts and weapons involved in violations are subject to forfeiture.

- Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d). This act prohibits the pursuing, shooting, shooting at, poisoning, wounding, killing, capturing, trapping, collecting, molesting, disturbing, purchase, or sale of bald and golden eagles. The act also prohibits the barter, transport, export, or import at any time or in any manner a bald or golden eagle, dead or alive; or any part, nest, or egg of these eagles, unless pursuant to a permit or regulation.

- Executive Order 13112, *Invasive Species* (signed Feb. 3, 1999). The Order calls for federal agencies to address invasive species problems and concerns. Under a National Invasive Species Management Plan, agencies are to develop programs to prevent the introduction of invasive species and to provide for the control and minimization of impacts and the restoration of natural species.

- The Animal Damage Control Act (7 USC 426). The Animal Damage Control Act authorizes the Animal and Plant Health Inspection Service to control wildlife damage on federal, state, or private lands. Control of wildlife, including non-native wildlife, may be performed by hunting, trapping, and poisoning.

### 11.1.2 State Wildlife Policy

The Virginia Department of Game and Inland Fisheries (VDGIF) is the policy-making entity responsible for conserving, protecting, and replenishing the supply of game, nongame wildlife, and fish of the Commonwealth of Virginia (Virginia Administrative Code, 4 VAC15). Under the wildlife permit program (§29.1-417 of the Code of Virginia), VDGIF must be consulted regarding capture, hold, propagation, and disposal of wildlife. Virginia law includes a number of provisions on the conservation and protection of wildlife:

- The Wildlife and Fish Laws at § 29.1-542 prohibits the importation of "predatory or undesirable" birds and animals, except under a special permit. The Virginia Administrative Code, 4 VAC15-30-40, lists the types of non-native (exotic) species that require a special permit, " and may be issued by the department [of Game and Inland Fisheries and Boating], if consistent with the department's fish and wildlife management program, to import, possess, or sell."

- The Virginia Land Conservation Foundation and Fund (§10.1-1020 of the Code of Virginia), for the acquiring of property to protect or preserve lands for threatened or endangered species, and fish and wildlife habitat.

- The Agricultural and Forestal Districts Act (§15.2-4301 of the Code of Virginia), to protect and conserve agricultural and forestal lands "as valued natural and ecological resources which provide essential open space for . . . wildlife habitat."

- Local Agricultural and Forestal Districts Act (§15.2-4401 of the Code of Virginia), to encourage localities of Virginia to protect and conserve agricultural and forestal lands "as

valued natural and ecological resources which provide essential open space for . . . wildlife habitat."

- The Animal Damage Control Act (7 USC 426) authorizes the APHIS to control wildlife damage on federal, state, or private lands. Control of wildlife, including non-native wildlife, may be performed by hunting, trapping, and poisoning.

- The Virginia Pesticide Control Act (Title 3.1, Chapter 14.1 of the Code of Virginia) confers powers and authority on the Virginia Pest Control Board to develop regulations that restrict or prohibit the sale or use and disposal of any pesticide or pesticide container or residuals that are toxic or hazardous to humans or wildlife, or may adversely affect the environment (Section 10.1.2).

State policy regarding endangered, threatened, and rare species is discussed in Section 12.1.2.

### 11.1.3 Department of Defense Wildlife Policy

DoD's natural resources management policy is contained within DoDI 4715.3, *Environmental Conservation Program*. This instruction requires installations to follow an ecosystem-based approach to natural resources management, to inventory and protect important biological resources, and to promote biodiversity. The instruction also allows for multiple uses of an installation's natural resources, and for public access to these resources for recreation, education and scientific research and study, compatible with the installation's ecosystem management goals. DoD's policy on wildlife management, as established in DoDI 4715.3, is as follows:

**Excerpts from DODI 4715.3**
**Select Provisions Applicable to Wildlife**

- Biodiversity conservation on DoD lands and waters shall be promoted when consistent with the mission and practicable to achieve the following goals:
  1. Maintain or restore remaining native ecosystem types across their natural range or variation.
  2. Maintain or reestablish viable populations of all native species in an installation's areas of natural habitat, when practical. (F2b)

- Ecosystem management shall do the following: . . . include a shift from single species to multiple species management. (F2a)

- Management measures for the removal or control of exotic species shall be included in installation INRMP's when applicable. (D2h)

- Consistent with ecosystem-based management, altered or degraded landscapes and associated habitats shall be restored and rehabilitated whenever practical. (D2l)

DoD Directive 4700.4, *Natural Resources Management Program*, also provides the following provisions:

**Excerpts from DoD Directive 4700.4**
**Select Provisions Applicable to Wildlife**

- Lands and waters suitable for management of fish and wildlife resources shall be managed to conserve wildlife resources for the benefit of the public. Nongame as well as game species shall be considered when planning activities. (B3a)
- Installation cooperative plans must provide for
  - Fish and wildlife habitat improvements or modifications
  - Range rehabilitation where necessary for support of wildlife
  - Control of off-road vehicle traffic
  - Specific habitat improvement projects and related activities and adequate protection for species of fish, wildlife, and plants considered threatened or endangered. (Definition 5)

DoD's pest management policy is contained within DoDI 4150.7, *Department of Defense Pest Management Program.* This instruction directs the reduction of feral or stray cats on military installations. It instructs military components, including the Army, to use the Armed Forces Pest Management Board's Technical Information Memorandum No. 37, *Guidelines For Reducing Feral/Stray Cat Populations On Military Installations In The United States*, as guidance for their feral cat program. DoDI 4150.7 also provides guidance for establishing and implementing an integrated pest management program on DoD lands. Excerpts from this instruction are provided in Section 10.1.3 of this INRMP.

DoD policy regarding endangered, threatened, and rare species is discussed in Section 12.1.3.

### 11.1.4 Department of the Army Wildlife Policy

DA's natural resources management policy is contained within AR 200-3, *Natural Resources - Land, Forest and Wildlife Management*. This regulation establishes the DA's requirements for managing and using land and water resources in accordance with the principles of ecosystem management, and institutes the DA's commitment to conserve, protect, and sustain biological diversity, and to restore degraded ecosystems. AR 200-3 also establishes the DA's commitment to manage fish and wildlife populations and their habitats, provide adequate staffing of professionally trained personnel, and establish a fish and wildlife enforcement program. The following excerpts from AR 200-3 present the DA's extensive fish and wildlife management requirements. Excerpts from AR 200-3 regarding threatened and endangered species are listed in Section 12.1.4.

**Excerpts from AR 200-3**
**Select Provisions Applicable to Wildlife**

- The natural resources management professional will be an active participant in all planning and decision making activities regarding uses of the land to ensure that current and planned mission activities regarding uses of the land to ensure that current and planned mission activities (for example, master planning, construction requests, site approval requests, and training exercise plans) are conducted in a manner which is compatible with natural resources and other environmental requirements. (3-2b)

Fish and Wildlife Management Requirements (6-1)

- The Fish and Wildlife Management program will provide for the management of fish and wildlife populations and their habitats consistent with accepted scientific principles, in compliance with the Endangered Species Act and other applicable laws and regulations, and in harmony with the total natural resources program. Emphasis will be placed on the maintenance and restoration of habitat favorable to the production of indigenous fish and wildlife, particularly Federally listed species protected under the Endangered Species Act, as amended.

- Lands and waters suitable for conservation of fish and wildlife resources will be managed to conserve wildlife resources. Non-game as well as game species will be considered when planning activities.

- The suitability and requirement of a military installation for fish and wildlife management will be determined by the installation and the MACOM after consulting with the USFWS and host State. Each installation will be classified as one of the following:

  Category I-Installations with adequate acreage of land and water resources suitable for fish and wildlife management. Each Category I installation will maintain an up to date fish and wildlife cooperative plan according to this regulation.

  Category II-Installations that lack adequate land and water resources for feasible fish and wildlife management. These installations may develop a limited management plan (non-consumptive, preservation, habitat protection, and so forth) based on installation resources and management objectives.

- Installation commanders with fish and wildlife management requirements will:

  Program for funds to conduct an effective program pursuant to the Fish and Wildlife Cooperative Plan required by the Sikes Act.

  Require the optimum use and staffing of professionally trained personnel (for example, wildlife biologist) at installations having fish and wildlife management requirements.

  Authorize and control fish and wildlife related activities in conformance with applicable Federal and State laws, Army regulations, and the installation Fish and Wildlife Cooperative Plan.

  Establish a fish and wildlife law enforcement program per paragraph 3-20 to address the requirements of the Fish and Wildlife Cooperative Plan.

**Excerpts from AR 200-3**
**Select Provisions Applicable to Wildlife**

***(continued)***

Authority to hunt, fish, and trap (6-2)

- (a) Hunting, fishing, and trapping may be permitted within the current huntable population levels and carrying capacity of specific wildlife habitats. The number of users of fish and wildlife resources may be limited on a daily or seasonal basis. Membership in an organization, including rod and gun clubs, will not be a prerequisite for or get priority in receiving permits or authorization to hunt, fish, or trap on Army installations.

- (b) All hunting, fishing, or trapping on a military installation under the control of the Department of the Army will be in accordance with applicable Federal, State, host nation, or territory laws and regulations.(10 USC 2671).

- (c) There will be no hunting, fishing, or other recreational activities in officially designated and marked impact areas and associated buffer zones. Impact areas that have been permanently or temporarily closed may be opened to hunting and fishing only after approval from the Installation Range and Safety Officers. The Range, Safety, and Natural Resource Offices will determine recreational use boundaries (pursuant to the Integrated Natural Resource Management Plan) that are adjacent to impact areas.

- (d) Any individual eligible to hunt, fish, or trap on a military installation must obtain the following:

  A license from the State in which the installation is located except as provided for in paragraph 6-3a(2).

  A special State permit (16 USC 670a) from the commander of said installation, or his designee, when such permits are required.

Whoever violates a requirement prescribed under subsections b or c above is liable of an offense under 10 USC 2671(c).

Installation permits and fees (6-3)

- Installation commanders may issue special installation permits to an individual only when same is in possession of a valid State or territorial hunting, fishing, or trapping license, as applicable except as set forth in subsection (2) below. An exception to the license requirement can be made when State laws do not grant equality of treatment to military personnel by not waiving residency requirements as specified in 10 USC 2671. Commanders will make written applications to U.S Army Directorate of Environmental Programs, Conservation Division through appropriate channels, for approval to issue permits for military personnel to hunt, fish, or trap on the installation without securing an appropriate State, host nation, or territory license.

- The annual demand for operation and maintenance funds frequently has a negative effect on installation efforts to fulfill obligations to foster sound fish and wildlife management programs. As a consequence, other fund sources must be considered. Pursuant to 16 USC 670a-f installation commanders will establish fees for hunting, fishing, or trapping.

**Excerpts from AR 200-3**
**Select Provisions Applicable to Wildlife**

***(continued)***

- Fees [for hunting, fishing, or trapping] are to be used on the installation from which collected for the protection, conservation, and management of fish and wildlife, including habitat restoration and improvement, biologist staff and support costs, and related activities, as stipulated in the Fish and Wildlife Cooperative Plan, but for no other purpose. Funds that are required to support hunting and fishing fee collection administration (that is, printing and issuing of permits) will not exceed 10 percent of the annual revenues from hunting, fishing, and trapping fees. Management of this source of funds will be the responsibility of the installation's natural resources management professional. All fees collected will be accounted for in accordance with guidance provided for the appropriation titled "Wildlife Conservation, Military Reservations," Army account 21X5095 (AR 37-100 and AR 37-108). Unobligated balances will be accumulated with current fee collections, and the total amount accumulated at an installation will be available for obligation as apportioned by the office of Management and Budget. Budget and support information, required to obtain obligation authorities, will be provided annually (Army Budget for Wildlife Fish and Game Conservation, Military Reservations, Report (RCS: ENG-303)) in accordance with instructions provided by USA, C-OK, ATTN: CERM-B, WASH D.C. 2031-1000.

- Special installation permits may be issued subject to the following criteria:

  Persons holding hunting, fishing, or trapping permits will stand at par with each other for use privileges, except that participation will be within manageable quotas and within the capability of the natural resources to support such use.

  The same fee will be charged for a particular use to all users at a particular installation except senior citizens, children under a specified age, and persons with physical disabilities. Fees will be commensurate with program costs, State and local fees for similar activities and facilities, and resources available for use. Exceptions to this must be submitted through command channels to USA Directorate of Environmental Programs, Conservation Division, ATTN: DAIM-ED-N, 600 Army Pentagon, Washington, D.C. 20310-0600, for approval by the Office of the Secretary of the Army.

  Ensure that the Fish and Wildlife Cooperative Plan, as outlined in 16 USC 670b, specifies that the possession of a special installation permit will not relieve the permittee of the requirements of other Federal laws, (for example, Migratory Bird Treaty Act, Lacey Act), nor of the requirements pertaining to State laws as set forth in 10 USC 2671.

- Funds collected pursuant to the Sikes Act (account 21X5095) may be used only to defray the costs of fish and wildlife management programs. The quality of hunting and fishing opportunities are usually in direct relationship with the effort expended for habitat protection and improvement and will receive primary emphasis when developing annual work plans to implement the Fish and Wildlife Management program. Funds collected for hunting and fishing permits will not be used for construction of recreational structures (for example, blinds, deer stands, fishing piers, and so on) or for transportation of hunters to designated stations, unless the only means of participation is by transportation which is required to reach the hunting and/or fishing areas. Such facilities are primarily for recreational use and, therefore, should be funded from the installation MOOR account.

**Excerpts from AR 200-3**
**Select Provisions Applicable to Wildlife**

***(continued)***

- A separate community recreation hunting and fishing activity fee, not accounted for as Sikes Act hunting and fishing permit fees (16 USC 670a), may be charged to users of optional hunting and fishing services. These fees should be used for items not authorized in c above (for example, prizes for fishing rodeos, use of blinds or fishing piers only when they are not a requirement to hunt or fish on the installation, rental of hunting and/or fishing equipment, and so on). All recreation hunting and fishing activity generated from these recreational activity fees will be deposited to the installation morale, welfare, and recreation (MOOR) fund.

Fish and Wildlife Cooperative Plan (6-4)

- In accordance with 16 USC 670a, the Fish and Wildlife Cooperative Plan is that component of the Integrated Natural Resources Management Plan that describes how the fish and wildlife resources at an installation will be managed. It is a tripartite agreement between the Installation, the FWS, and the appropriate State agency designated by the State in which the installation is located. The cooperative plan provides a program of planning for, and the development, maintenance, and coordination of wildlife, fish, and game conservation. It will include Endangered Species Management Plans (ESMPs) for listed and proposed species and critical habitats present on the installation including areas used by tenant organizations (refer to chapter 11 for specific requirements). Each Fish and Wildlife Cooperative Plan (Part IV) will provide for, but not be limited to

  Fish and wildlife habitat improvements or modifications.

  Wildlife considerations in all range rehabilitation.

  Control of off road vehicle traffic.

  ESMPs for listed and proposed species and critical habitat including specific habitat improvement projects and related activities.

  Use and protection of fish and wildlife resources, to include both consumptive and non-consumptive use, and natural resources law enforcement requirements.

  Designated responsibilities for the control and disposal of feral animals.

- A cooperative plan will be adopted by an installation commander only after ensuring its compatibility with the rest of the Integrated Natural Resources Management Plan, the Endangered Species Act and other applicable Federal, State, and local laws and regulations. Agreement by all three parties regarding the fish and wildlife management plan for an installation makes that plan a cooperative plan pursuant to 16 USC 670a and the exclusive fish and wildlife component of the Integrated Natural Resources Management Plan.

- Cooperative plans will be reviewed and updated annually to incorporate new findings, including newly approved [Endangered Species Management Plans] and changes as specified in chapter 11 and revised at least every 5 years.

**Excerpts from AR 200-3**
**Select Provisions Applicable to Wildlife**

***(continued)***

Introduction of new or exotic species (6-5)

- All proposed introduction or reintroduction of wildlife species will be thoroughly assessed in accordance with the National Environmental Policy Act and associated FWS requirements to determine the impact on existing flora and fauna and the installation mission. Introduction of species of fish and wildlife foreign or native to the United States or reintroduction of formerly indigenous species will be accomplished only upon the approval of the FWS, the State, the MACOM, and HQDA (USA Directorate of Environmental Programs, Conservation Division, DAIM-ED-N), and will be made a part of the installation Fish and Wildlife Cooperative Plan. See paragraph 11-14 for additional guidance on the introduction and reintroduction of Federal and State listed, proposed, and candidate species on Army lands.

Population management (6-6)

- Wildlife populations will be managed in accordance with the management objectives set forth in the installation Fish and wildlife Cooperative Plan. Wildlife population management objectives will include, as a minimum:

  Conserve, protect, and enhance threatened and endangered species and their habitats.

  Maintenance of healthy, sustainable wildlife populations within the carrying capacity of the installation's habitat.

  Prevention of health and safety hazards.

  Provision for wildlife related recreation.

  Animal damage control.

Habitat management (6-7)

- Habitat management efforts will be accomplished in a manner to conserve and enhance existing flora and fauna consistent with the Army goal to conserve, protect, and sustain biological diversity while supporting the accomplishment of the military mission. Activities will be directed towards management to maintain healthy ecosystems, and to restore degraded ecosystems to their historic functions and values. Primary management consideration will be given to the management of indigenous listed, proposed, and candidate species habitats. Also, consideration of other environmentally sensitive areas and other areas of special concern (for example, riparian zones, wetlands, highly erodible areas) should be identified and addressed in the Integrated Natural Resources Management Plan.

Diseases affecting fish, wildlife, and domestic animals (6-8)

**Excerpts from AR 200-3**
**Select Provisions Applicable to Wildlife**

***(continued)***

- Fish and wildlife populations are susceptible to a large variety of morbidity and mortality factors, some of which may be shared among and between wild and domestic species. Requirements for interaction with other Federal agencies, should a foreign animal disease be introduced on or near a military installation, are outlined in the Forces Command (FORSCOM) Animal Disease Eradication Plan (FADEP). Installation natural resources managers should consult with appropriate Veterinary Corps personnel regarding fish, wildlife, and domestic animal dieoffs and unnatural behavior occurring on their installation. Similarly, the responsible Army veterinarian, natural resource manager, or command element should contact local, State, and Federal officials whenever necessary."

### 11.1.5 Fort Belvoir Wildlife Policy

Fort Belvoir's installation-specific wildlife management policies are contained within the Fort Belvoir Supplement to AR 200-3 (dated February 20, 1996) (Appendix H). Excerpts relevant to wildlife are presented below:

**Excerpts from Fort Belvoir Supplement to AR 200-3**
**Select Provisions Applicable to Wildlife**

Fish and Wildlife Management Requirements. (6-1)

- Commander, U.S. Army Garrison Fort Belvoir, has the responsibility to establish and enforce policies and procedures involving fish and wildlife management on Fort Belvoir. In accordance with the Cooperative Plan for Conservation and Development of Fish and Wildlife Resources on military Reservations, all hunting, fishing, and trapping activities on Fort Belvoir will comply with FB Supplemqnt 1 to AR 200-3 and applicable Federal, Commonwealth of Virginia, Fairfax County, Department of the Army, and Fort Belvoir laws and/or regulations. The intent of the above policies is:

  (1)To manage Fort Belvoir's fish and wildlife resources. Habitat improvements and population control will serve as the basic means of perpetuating and improving fish and wildlife resources.

  (2) To conserve and protect fish and wildlife habitat, and sustain biodiversity, on Fort Belvoir.

  (3) To develop and promote good sportsmanship through education and coordinated recreational activities.

**Excerpts from Fort Belvoir Supplement to AR 200-3**
**Select Provisions Applicable to Wildlife**
***(continued)***

- Major responsibilities performed by the installation Provost Marshal Office (PMO) include the following:

  (1) Within criteria established in paragraphs 6-2 and 6-3 of AR 200-3, support Installation Natural Resource Enforcement Personnel in the enforcement of all hunting, fishing, and trapping laws and regulations.

  (2) If the records at the end of the hunting day indicate that a hunter has failed to check out of his or her hunting area, Outdoor Recreation personnel monitoring the check in/check out of hunters will notify PMO of the missing hunter, home telephone number, etc. The PMO will contact the hunter's home and office to coordinate search activities for the missing hunter.

  (3) Report accidents to the Installation's Safety Director.

- Major responsibilities performed by DIS include the following:

  (1) Provide staff supervision of the fish and wildlife program as outlined in AR 200-3, the Integrated Natural Resource Management Plan, and the Cooperative Agreement.

  (2) Establish maximum number of hunters per hunting area. Determine harvest limits including buck-to-doe ratio, number, sex, and species per hunter and area. This control may be exercised at any time by DIS when deemed necessary in the interest of natural resource conservation or public safety.

  (3) Establish special hunting management, such as early hunting in selected areas, or hunting in areas not designated as hunting areas, inclusive of any security areas. Such special hunting management shall be determined on the basis of the need to reduce or remove deer from specific areas for reasons of safety, herd health, habitat loss, or other environmental concerns. This management will be coordinated with Federal, Commonwealth of Virginia, Outdoor Recreation, and other Army officials for approval.

  (4) Issue an annual Hunting Fact Sheet prior to each hunting season detailing open areas and restrictions projected for that year.

  (5) Develop and implement comprehensive management plans, maintain and manage day-to-day activities at the Accotink Bay Wildlife Refuge and the Jackson Miles Abbott Wetland Refuge.

  (6) Develop and implement a comprehensive management plan for the Fort Belvoir Forest and Wildlife corridor.

  (7) Within criteria established in paragraphs 6-2 and 6-3 of AR 200-3, enforce all hunting, fishing, and trapping laws and regulations.

**Excerpts from Fort Belvoir Supplement to AR 200-3**
**Select Provisions Applicable to Wildlife**
***(continued)***

- Major responsibilities performed by the Directorate of Personnel and Community Activities (DPCA) include the following:

  (1) Coordinate recreational aspects of the hunting program and issue a hunting Memorandum of Instruction annually in coordination with other Directorates to include the Directorate of Installation Support (DIS) and the Directorate of Plans, Training, Mobilization, and Security (DPTMS).

  (2) Issue and record installation's hunting permits.

  (3) Coordinate with DPTMS on the availability of training areas for the recreational hunting program, to avoid conflicts with training activities when making hunting assignments.

  (4) Coordinate with DIS Environmental and Natural Resource Division on the availability of wildlife areas for the recreational hunting program when making hunting assignments.

  (5) Inform PMO of any hunters who fail to check out of their hunting areas at the end of the day so established search procedures can take place.

  (6) Sponsor the required safety briefing(s) and qualification tests.

  (7) Ensure that all hunters have completed a Virginia approved hunter safety course, International Bowhunter Safety course and a DPCA archery proficiency test.

  (8) Promote the organization and development of clubs (conservation, sportsmen, etc.).

  (9) Coordinate new Game Check-in Procedures with DIS, Environmental and Natural Resource Division.

  (10) Coordinate tick and blood samples and collection procedures with DeWitt Army Community Hospital Preventive Medicine.

- Major responsibilities performed by the installation veterinarian include the following:

  (1) Conduct periodic disease surveys of the installation's wildlife populations as practicable.

  (2) Provide drugs and review dosages for tranquilizing wild species of animals.

  (3) Determine and provide treatment for sick or injured wildlife.

**Excerpts from Fort Belvoir Supplement to AR 200-3**
**Select Provisions Applicable to Wildlife**
***(continued)***

- Major responsibilities performed by DPTMS include the following:

  (1) Review proposed hunting seasons, dates, and areas to assure there is no conflict with training, testing, and other official requirements when developing training area schedules.

  (2) Notify the hunter control activities (e.g., DIS and DPCA) of training schedules for each area including any late cancellations.

  (3) Provide environmental protection of the training areas through controlling unauthorized use, off-road vehicle use and illegal dumping in cooperation with DIS and PMO.

- Major responsibilities performed by Staff Judge Advocate include the following:

  (1) Review Fort Belvoir hunting and fishing regulations for conformance with Federal, Commonwealth of Virginia, and Army laws and regulations.

  (2) Ensure that all violations of Federal, Commonwealth of Virginia, local and Army fish and wildlife regulations are investigated and prosecuted as appropriate.

  (3) Review administrative revocation of privileges for legal sufficiency.

Authority to Hunt, Fish and Trap. (6-2)

- Except for the prohibited practices and requirements listed below, the specific fishing laws and regulations to be followed by Fort Belvoir fishermen are identical to those of the Commonwealth of Virginia regulatory agencies governing the water body.

  (1) Current Federal, Commonwealth of Virginia, and local laws and regulations will prescribe open seasons, size, and creel limits of fish taken. Limits may be modified by DIS for natural resource management purposes within the bounds of these laws and regulations.

  (2) Trotlines and snags are not permitted in any fishing waters on the installation.

  (3) Fishermen and boaters are required to provide for environmental protection of all shoreline areas through restricting watercraft launching to designated marina launch facilities. Streambank clearing, littering, parking in other than designated areas, and driving of privately owned vehicles (POV) off primary installation roads are prohibited.

  (4) Scheduled training and military missions have priority over hunting and fishing at all times.

**Excerpts from Fort Belvoir Supplement to AR 200-3**
**Select Provisions Applicable to Wildlife**
***(continued)***

- Except for the prohibited practices and requirements listed below, the specific hunting laws to be followed by Fort Belvoir hunters are identical to those of the Commonwealth of Virginia and Fairfax County regulations. These are published annually by the Virginia Department of Game and Inland Fisheries.

  (1) Individuals wishing to hunt deer must have in their possession a current Fort Belvoir area pass and parking permit, a valid Virginia hunting license, and a Virginia Archery Big Game and/or firearms Big Game Stamp. Persons only wishing to hunt small game must have a Virginia hunting license and a Fort Belvoir hunting permit.

  (2) Fort Belvoir hunting permits will be issued only upon personal application at the hunting control point on authorized hunting days.

  (3) In accordance with the Memorandum of Instruction, persons under eighteen years of age must be accompanied by a licensed parent or guardian while hunting on the Installation.

  (4) Permits are not transferable, are valid for the day on which they are issued, and are valid only in the hunting area specified on the permit.

  (5) Authorized hunting areas are presented in the annual Hunting Fact Sheet published by DIS.

  (6) Trapping may be permitted as required. All trapping will require a special use permit available from DIS and must comply with all Federal, State, and local laws and regulations.

  (7) Falconry is permitted on Fort Belvoir in accordance with all Federal, Commonwealth of Virginia, and local restrictions. Falconers will register with DPCA prior to going afield. Falconers will also be required to register and acquire a daily permit from DIS on the day of the hunt. Only two birds may be flown in any one hunting area at one time and this will not reduce the number of hunters permitted in that area. Under no circumstances may raptors be collected on the installation or any raptor's nest be disturbed.

  (8) Legal small game to be taken will be designated annually in the DIS Hunting Fact Sheet.

  (9) The DPCA will assign hunters to a specific area. Hunters will not enter another hunting area without first reporting back to the hunting control point. They will be reassigned to a new area, if available.

  (10) No hunting is permitted in dud or demolition areas. If a dud is found, the site shall be marked and the exact location reported to DPTMS immediately.

  (11) All hunters are required to process in and out of the DPCA Outdoor Recreation office whether or not they have harvested any deer. Willful failure of any person to check in and out may cause denial of future hunting privileges on Fort Belvoir. All harvested big game must be checked at the Virginia Game Check Station (Outdoor Recreation office) or Military Police (MP) Station prior to removal from Fort Belvoir.

**Excerpts from Fort Belvoir Supplement to AR 200-3**
**Select Provisions Applicable to Wildlife**

***(continued)***

(12) The hunting permit and parking permit will be issued at the DPCA Outdoor Recreation Office. The parking permit must be displayed on the inside left (driver's side) of the vehicle's windshield.

(13) All deer killed will be tagged in the field, and checked and weighed at the Fort Belvoir Game Check Station, or checked at the MP Station, in accordance with the Memorandum of Instruction.

(14) Organized group hunting is prohibited.

(15) Dogs will not be used for fox hunting.

(16) A Memorandum of instruction will be prepared annually by DPCA to include hunter qualification dates, times, fees, and reservation information (dates and times).

(17) A Hunting Fact Sheet will be prepared annually by DIS and appended to the Memorandum of Instruction prior to distribution to the hunting public. The Hunting Fact Sheet will specify hunting slots and areas open, hunting dates, safety restrictions, legal game, bag limits, legal weapons and special restrictions concerning environmental management.

(18) Bow hunting may be done from the ground or from elevated stands. Hunters are encouraged to use portable tree stands. No additional permanent tree stands will be permitted to be built on the installation. Repair of existing numbered tree stands may be performed. Existing tree stands can be used on a first-come basis. Any hunter using a tree stand on the installation is doing so at HIS/HER OWN RISK. The U.S. Government will not be responsible for any damage or injury to person(s) or property incurred as a result of using a tree stand for hunting on Fort Belvoir.

(19) Scheduled training and military missions have priority over hunting and fishing at all times.

- Hunters will comply with the following safety requirements:

(1) Prior to making a hunting reservation, all hunters will be required to document that they have satisfactorily completed a Virginia approved hunter safety course, International Bowhunter Safety Course, and archery proficiency test.

(2) Buffer areas, within which there will be no hunting, will be included with the safety restrictions in the annual DIS Hunting Fact Sheet.

(3) Hunters will immediately cease hunting and report back to DPCA when any type of training or work activity is observed in their assigned hunting area.

(4) Hunters will ensure that they have a safe field of sight to and beyond their targets.

**Excerpts from Fort Belvoir Supplement to AR 200-3**
**Select Provisions Applicable to Wildlife**
***(continued)***

- Violators of hunting regulations, safety regulations or principles of good sportsmanship are subject to administrative restrictions, revocation of hunting and fishing privileges and possible judicial proceedings in the Federal Magistrate Court. Military personnel may further be subject to disciplinary action under the Uniform Code of Military Justice.

  (1) Application by military personnel for restoration of revoked hunting and fishing privileges on the installation shall be submitted through channels to the installation commander. Application for restoration of hunting and fishing privileges on the installation by civilians will be made in writing to the commander through DIS and DPCA.

  (2) Fishing is authorized from dusk to dawn in accordance with applicable Commonwealth of Virginia regulations, except in access-controlled waters, such as training areas and wildlife refuges.

Fort Belvoir's DIS natural resources staff creates a hunting fact sheet annually that outlines the hunting season, bag limits, hunting area restrictions, and other regulations that guide the hunting program on Fort Belvoir (Appendix H). The fact sheet is written in accordance with federal, state, Fairfax County, and Fort Belvoir regulations. The fact sheet establishes allowable hunting as follows:

- Archery is the only legal means for hunting deer on Fort Belvoir.
- In accordance with Virginia State regulations governing season and bag limits, squirrel, woodchucks, fox, raccoon and turkey [as amended] may be taken on Fort Belvoir by archers. . . . No other wildlife may be taken by any means at any time.
- Within State of Virginia and U.S. Fish and Wildlife Service federal regulations, falconry is permitted on Fort Belvoir. Falconry is only permitted on Sunday during Fort Belvoir hunting seasons. Falconers are required to register with Outdoor Recreation and sign out for specific hunting areas in the same manner as deer hunters. Falconers are required to possess a U.S. Fish and Wildlife Service Falconry Permit and a valid Commonwealth of Virginia Hunting License. Special permits are available for falconers; however, a maximum of two individuals will be allowed in a training area at one time. No predatory birds may be collected on Fort Belvoir and nests are not to be disturbed in any manner. Falconers should contact Outdoor Recreation for qualification details.
- Failure to strictly adhere to the federal, state, local laws and regulations; the Fort Belvoir MOI and the Fort Belvoir Fact Sheet procedures and restrictions may result in criminal prosecution and/or loss of hunting privileges on Fort Belvoir, as applicable.

Fort Belvoir's *Integrated Pest Management Policy*, 200-04-00 dated 24 January 2000 requires planning that incorporates "education, recordkeeping, and best management practices to prevent

pests and diseases from damaging property" (Appendix K). It also requires that all pest management operations on Fort Belvoir are carried out in accordance with the *Fort Belvoir Integrated Pest Management Plan* and applicable federal, state, and local laws (U.S. Army, 2000b). The policy letter designates ENRD as the responsible party for pest management compliance on Fort Belvoir, which enables it to enforce its requirements.

Fort Belvoir Regulation 40-905, *Animal Control* (U.S. Army, 2000c) addresses the release of domesticated wildlife on installation property. The policy prohibits the release of domestic animals on post and establishes guidelines for capturing and removing feral animals. The regulation applies to all people residing on, employed by, serving on, or visiting Fort Belvoir. It enables Fort Belvoir to enforce the policies established within the regulation.

Fort Belvoir's *Pet Control on Post* Policy 40-14-00 (dated 3 October 2000) aims to maintain a safe and healthy living environment by making pet owners responsible for their pet's actions while on post. The regulation states that "…any pet: (1) not registered with the Fort Belvoir Veterinary Treatment Facility, (2) involved with an act of aggression, or (3) found unleashed or unaccompanied by a responsible party, can be ordered removed from the installation boundaries. Owners are accountable for their pet at all times…"

Fort Belvoir Regulation 210-27, *Range Procedures and Utilization of Training Areas*, provides specific requirements for environmental protection and conservation of training areas. It requires that vehicles stay on established trails and roads, restricts riot control agents to specified training areas to minimize environmental damage, and requires that all waste be removed from the training areas and disposed of properly. The regulation also requires ENRD review of all land disturbing activities (U.S. Army, 1994).

### 11.1.6 Chesapeake Bay Program

DoD and DA are signatory partners of the Chesapeake Bay Program (CBP), through which federal partners, including Fort Belvoir, strive to restore and protect the Bay's natural resources while promoting public awareness. The 1987 *Chesapeake Bay Agreement*, the 1990 *Cooperative Agreement Between DoD and EPA Concerning Chesapeake Bay Activities*, the 1993 *DoD/EPA Action Items for the Chesapeake Bay Program*, the 1994 *Agreement of Federal Agencies on Ecosystem Management in the Chesapeake Bay*, the 1998 *Federal Agencies' Chesapeake Ecosystem Unified Plan (FACEUP)*, and the renewed Chesapeake Bay agreement, *Chesapeake 2000*, contain specific goals, objectives, and commitments designed to provide for the restoration and protection of the Bay's living resources and their habitats. In particular, *FACEUP* commits partners to inventory wildlife habitat restoration needs on federal lands and complete two priority habitat restoration projects each year. Specific CBP directives that pertain to wildlife and wildlife habitat include Directive No. 97-1, *Baywide Nutrient Reduction Progress and Future Directions*; Directive No. 97-3, *Wetlands Protection and Restoration Goals*; Directive No. 94-1, *Riparian Forest Buffers*; Directive No. 94-3, *Framework for Habitat Restoration*; and Directive No. 93-4, *Fish Passage Goals*.

### 11.1.7 Partners in Flight Program

DoD is a partner in promoting and supporting the Partners in Flight (PIF) Program. The PIF Program strives to address the problems facing neotropical migratory birds through

communication, cooperation, and conservation efforts. As part of the PIF Program, DoD installations are encouraged to incorporate elements of the PIF Bird Conservation Strategy into their INRMPs. Such elements include identifying species and habitats most in need of conservation; establishing population and habitat conservation objectives; creating a Bird Conservation Plan to meet established objectives; implementing the plan; and monitoring progress.

## 11.2 BASELINE WILDLIFE CONDITIONS

Fort Belvoir has conducted a number of wildlife surveys for inventory and monitoring purposes (Table 11.1). As of 2000, Fort Belvoir had completed comprehensive installation-wide inventories of all fish and wildlife, except for bats and invertebrates. Various additional wildlife survey efforts have been done or are underway as of 2000. These are discussed below grouped by wildlife type. Surveys for endangered and threatened species (i.e., bald eagle, wood turtle, and peregrine falcon) are addressed in Section 12. Surveys for aquatic resources are presented in Section 7.

**Table 11.1: Sources of Fort Belvoir Wildlife Information**

| *Subject/Section* | *Author* | *Method* | *Coverage* | *Year* | *Product* |
|---|---|---|---|---|---|
| Rare species (Section 12.2.4) | Virginia Department of Conservation and Recreation, Division of Natural Heritage | Field survey | Installation-wide exclusive of cantonment areas | 1994-1995; 1996 | Species lists, report, and maps |
| Wildlife Use of Underpass Structures in Forest and Wildlife Corridor (Section 11.2.1) | George Mason University | Field survey | 3 locations in corridor | Year-round 1995 – 1998 | Movement counts by species, report |
| Small Mammals (Section 11.2.1) | George Mason University | Field survey | Select locations | 1988 – 1994 | Species lists, reports |
| Deer Census (Section 11.2.1) | Inhouse, Vista Technologies, Inc., and Volunteers | Spotlight survey | Installation-wide route | 1988-current | Installation population estimate population trends |
| Deer Population Characteristics (Section 11.2.1) | Inhouse, Vista Technologies, Inc., and volunteers | Measurements | All harvested deer | 1995-current | Total harvest, age sex ratio, weight data |
| Deer Health Check (Section 11.2.1) | Virginia Department of Game and Inland Fisheries, in-house, and Vista Technologies | Necropsy | Select sample | 1987 –current (performed at least every 5 years) | Report |

| Table 11.1: Sources of Fort Belvoir Wildlife Information | | | | | |
|---|---|---|---|---|---|
| ***Subject/Section*** | ***Author*** | ***Method*** | ***Coverage*** | ***Year*** | ***Product*** |
| ***(continued)*** | | | | | |
| Bald Eagle (Section 12.2.1) | In-house and Vista Technologies, Inc. | Fort Belvoir Bald Eagle Management Plan protocol | Nest site and shoreline | Annual, year-round | Nest use and production assessment and shoreline use (foraging) assessment data |
| Year-Round Land Bird Counts (Including Breeding Birds) (Section 11.2.2) | Waterways Experiment Station (WES) and in-house | Point count | Installation-wide, excluding cantonment areas | Annual, one week each season 1998-current | Bird counts by species and report; bird checklist |
| Shorebirds (Section 11.2.2) | In-house | Point count | One location on Accotink Bay | Weekly July 15-October 15; March 15-May 15 1998 - current | Bird counts by species |
| Waterfowl (Section 11.2.2) | In-house and Vista Technologies, Inc. | Point count | Shorelines/tidal marsh areas | Irregular October-April 1997 - current | Bird counts by species |
| Neotropical Migratory Bird (Section 11.2.2) | Institute for Bird Populations | Monitoring Avian Productivity and Survivorship (MAPS) program protocol | Two sites in Training Area 16/HECSA | Annually, May-June 1995-current | Population data, report |
| Christmas Bird Count (Section 11.2.2) | Audubon Society and in-house | Audubon Society protocol | Installation-wide | Annually (December or January), 1941 - current | Bird counts by species |
| Northern Virginia Breeding Bird Survey (Section 11.2.2) | Audubon Society and in-house | Audubon Society protocol | Installation-wide exclusive of cantonment areas and EPG | Annual (June) have data from 1995-current | Bird counts by species |
| Reptiles and Amphibians (Sections 11.2.3 and 11.2.4) | George Mason University | Field survey | Corridor area | 1987 – 1994 | Species lists and reports |
| Reptiles and Amphibians (Sections 11.2.3 and 11.2.4) | In-house | Field survey | Corridor area | 1988-1994 | Counts by species |
| Amphibians (Section 11.2.4) | Dr. Joseph Mitchell | Field survey | South Post training area | 1995 – 1997 | Species list, report |

### 11.2.1 Mammals

With the exception of bats, the mammal species occupying Fort Belvoir are fairly well documented. The mammal surveys are sufficient to provide an inventory of mammal species (except bats) occurring on post. None of the surveys were designed to assess population levels and trends; the results provide general information regarding the abundance and habitat usage of each species on post.

Fort Belvoir performed a series of baseline small mammal field surveys from 1987 through 1994, covering representative areas of all habitat types on post. These surveys were conducted by George Mason University to develop a species list for Fort Belvoir, and to describe wildlife movement/migration routes through the installation. The data have been incorporated into the GIS, but are not in a format suitable for statistical analyses. The collective results of these surveys were published by George Mason University in *The Maryland Naturalist* as "The Mammals of Fort Belvoir, Virginia" (Ernst et al., 1997b). Fort Belvoir monitored wildlife movement through three wildlife-crossing structures along the Fairfax County Parkway from 1995 through 1998. This monitoring was done by George Mason University, and documented wildlife use of the underpass structures. Information from this survey has been incorporated into the installation GIS. During the summer of 2000, Virginia Tech monitored wildlife movement through the underpasses as part of their support to Fairfax County's rabies control program. This effort documented continued wildlife use, including deer (unpublished information).

Other monitoring efforts on Fort Belvoir include deer spotlight monitoring, deer health checks, and raccoon monitoring. The annual deer spotlight surveys, initiated on Fort Belvoir in 1988, are used to estimate the installation deer population. Data from the deer spotlight monitoring surveys have been incorporated into the installation GIS. The deer health check data are used to detect and monitor disease outbreaks and determine overall herd health. The raccoon monitoring effort was initiated in 1999 as part of the installation's participation in Fairfax County's rabies control program.

Forty-three species of mammals have been identified as occurring, or potentially occurring on Fort Belvoir (Appendix D, Table D.2). The resident mammal species appear to be what one would expect to occur in the mix and quality of on-post habitat types. The northern short-tailed shrew (*Blarina brevicauda*) is probably the most abundant mammal on post. This species occurs in a wide variety of terrestrial habitats. The "Mammals of Fort Belvoir, Virginia" report (Ernst et al., 1997b) identified several species of regionally rare mammals through the field surveys. On Fort Belvoir, the southeastern shrew (*Sorex longirostris*), an inhabitant of damp fields, thickets and low-land forest, is at the northern limit of its range; the smokey shrew (*Sorex fumeus)* and the deer mouse (*Peromyscus maniculatus*), both forest inhabitants, are at the eastern limits of their ranges; and the marsh rice rat (*Oryzomys palustris*), an inhabitant of marshes and marsh edges, is at the western limit of its range. The pygmy shrew (*Sorex hoyi*), one of the rarest mammals in the region, occurs in hardwood forests[3]. Appendix D, Table D.2 presents more-specific information on the abundance and habitat usage of Fort Belvoir mammals.

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[3] Although considered regionally rare in the Mammals of Fort Belvoir Survey, these mammals do not carry federal, state, or DCR-NHP status.

Fort Belvoir possesses fairly extensive areas of undisturbed mature forest. These areas provide habitat that supports a variety of small ground-dwelling mammals such as chipmunk (*Tamias striatus*), white-footed mouse (*Peromyscus leucopus*) and woodland vole (*Microtus pineotrum*), as well as for the arboreal squirrels (eastern gray squirrel [*Sciurus carolinensis*] and southern flying squirrel [*Glaucomys volans]*). Forest areas with shade, vegetative ground cover, and woody debris provide habitat conditions for such species as common striped skunk (*Mephites mephites*), which occurs in the more upland settings, and Virginia opossum (*Didelphis virginiana*), which occurs in the more lowland settings.

Fort Belvoir also possesses significant areas of grassy old-field habitat, which occur on Fort Belvoir at three closed landfills, along roadway and utility corridors, and in training areas. These areas provide habitat conditions for such species as the meadow vole (*Microtus pennsylvanicus*) and eastern mole (*Scalopus aquaticus*).

At Fort Belvoir, many mid-sized terrestrial mammals, such as the eastern cottontail rabbit (*Sylvilagus floridana*), woodchuck (*Marmota monax*), and long-tailed weasel (*Mustela frenata*) inhabit the transition areas between forest and old field habitats (i.e., edge areas) where there is both grass cover and tangled underbrush. These species can also be encountered in a wide variety of other habitat types on post.

The extensive stream, marsh, and riparian habitats on post support the water-dependent mammal species, such as beaver (*Castor canadensis*), muskrat (*Ondatra zibethicus*), river otter (*Lutra canadensis*), mink (*Mustela vison*) and star-nosed mole (*Condylura cristata*). Beaver are of management interest on Fort Belvoir not only from a problem standpoint, but because they can significantly alter habitat conditions through tree removal and dam building. Beaver impoundments appear to be responsible for creating extensive areas of palustrine wetland along Dogue Creek and within drainages to Accotink and Pohick Creeks.

The river otter is another species of management interest. In addition to trapping for the fur trade, which has not occurred at Fort Belvoir in the past several decades, habitat loss and water pollution are the major threats to this species' survival. Although the river otter has not been sighted frequently on Fort Belvoir, there is evidence of recent increases in this species' abundance along Fort Belvoir waterways.

Fort Belvoir's largest mammal, the white tail deer (*Odocoilus virginiana*) can be found throughout the installation, from deep woods to wetlands to housing areas, although its preferred habitats are old-field and second-growth forest. The absence of natural predators at Fort Belvoir and throughout the region has contributed to a steadily increasing regional deer population. This population increase raises significant management concerns not only regarding the detrimental effect of overpopulation on herd health[4], but also on wildlife habitat (i.e., habitat loss through overbrowsing). Additionally, the growing deer population on post poses a safety hazard because of the increased potential for collisions with vehicles. Installation records indicate an average of

[4] Fort Belvoir experienced an outbreak of epizootic hemmorrhagic disease among the installation deer in late 1999. This outbreak was occurring throughout the Mid-Atlantic at that time.

30 to 35 road kills reported on-post each year[5]. For the past 5 years, the deer population was estimated between 800 and 1,000 animals with an increasing trend. A dramatic increase in population was recorded between 1996 and 1997, but this increase has slowed since 1997.

The raccoon (*Procyon lotor*) is the most abundant predator on Fort Belvoir. Other predators include the common striped skunk, red fox (*Vulpes vulpes*), and the gray fox (*Urocyon cinereoargonteus*). These species tend to hunt edge and corridor areas, and move throughout the installation along drainages. Their populations are influenced by cycles of disease such as canine distemper and rabies. These cycles, in turn, greatly influence population cycles of the smaller mammals, as well as reptiles and amphibians.

Other predators that could occur on Fort Belvoir include the bobcat (*Lynx rufus*), which is reported on the Mason Neck peninsula, and for which tracks have been reported in installation drainages; and the coyote (*Canis latrans*), which occurs in western Fairfax County. Suitable habitat for both species occurs on the installation. If these species were to become resident on post, they would likely influence the populations of other mammal species. In addition to disease and predation, the other major source of mortality among Fort Belvoir mammals is road kill.

As stated earlier, bats have not been fully documented on Fort Belvoir. The installation has conducted one limited survey for bats. This survey identified the big brown bat (*Eptesicus fuscus*), a year-round resident that occupies structures; and the red bat (*Lasiurus borealis*) and eastern pipistrelle (*Pipistrellus subflavus*), both year-round residents of open woodland settings. The survey also identified the migratory silver-haired bat (*Lasionycteris noctivagans*). Other bats considered likely to occur on post (based on regional sightings) are the little brown bat (*Myotis lucifugus*) and Keen's myotis (*Myotis keenii septentrionalis*), which occupy structures and forage over water and in forests, respectively; the hoary bat (*Lasiurus cinereus*), a migratory species; and the evening bat (*Nycticeius humeralis*), a woodland species. Though not recorded in the area, it may be possible for the federally listed endangered Indiana bat (*Myotis sodalis*) to occur in the region.

The house mouse (*Mus musculus*) and the Norway rat (*Rattus norvegicus*), non-native mammals, are documented on post. These animals, along with the woodchuck (*Marmota monax*), can cause damage in the cantonment area. Other problematic mammal species include feral dogs and feral cats. Feral cats are of particular concern because of the risk of disease (e.g., rabies) they pose to humans and pets, and because of their documented devastation of ground nesting birds and small mammals. Fort Belvoir Regulation 40-905, *Animal Control* (U.S. Army, 2000c), prohibits the abandonment of any animal on the installation and outlines procedures if stray animals are found.

### 11.2.2 Birds

The birds of Fort Belvoir are very well documented. Information on the species and abundance of birds on post has been collected through a number of surveys and monitoring efforts undertaken by the installation, as well as by various birding organizations and individuals (Table 11.1).

[5] Not all road kills are reported. The actual number of road kills is probably higher.

In 1997 and 1998, Fort Belvoir initiated three comprehensive installation-wide survey programs addressing the distribution and seasonal abundance of bird species on post: (1) the year-round (i.e., spring, summer, fall and winter) landbird survey performed by Waterways Experiment Station (WES) and installation staff (Fischer and Fleming, 1999); (2) the shorebird survey performed by installation staff; and (3) the waterfowl survey performed by installation staff.

These major survey efforts were designed and implemented not only to develop a comprehensive species list, but also to assess the relative abundance of bird species, to determine the association of species with habitat types, and to identify trends in populations and distribution over time. These three surveys are intended to continue over the long-term. The data from these surveys have been incorporated into the installation GIS.

Another long-term monitoring program, which has been ongoing at Fort Belvoir since 1995 is monitoring breeding neotropical migratory and resident birds through the Monitoring Avian Productivity and Survivorship Program (MAPS). MAPS is being performed by the Institute for Bird Populations under DoD's Legacy Resources Management Program (Pyle et al., 1999; DeSante et al, 1998). MAPS is a partnership between the United States and Canada designed to provide broad-scale land bird population data (e.g., adult population size, post-fledging productivity, adult survivorship and recruitment). This study is intended to continue for at least a 10-year period.

Other major long-term annual survey events at Fort Belvoir include the Christmas Bird Count (since 1941) and the Northern Virginia Breeding Bird Survey (since 1995). The Christmas Bird Count is performed by the Fairfax Audubon Society with installation staff participation. In 1998, the Northern Virginia Breeding Bird Survey, which was originally initiated by the Fairfax Audubon Society, was incorporated into Fort Belvoir's land bird survey, and is now being performed by Fort Belvoir staff. Data from these surveys are being incorporated into the installation GIS.

As a result of the many surveys and observations over the years, a total of 263 bird species have been identified on Fort Belvoir. Appendix D, Table D.3 presents the species identified on post, together with information on their seasonal abundance and habitat associations. Appendix N presents the Fort Belvoir bird checklist, which provides more detailed information on the seasonal abundance. This large number of bird species on Fort Belvoir reflects the variety and quality of natural habitats at the installation.

Thirty four percent (88 species) of Fort Belvoir bird species are year-round residents, 27% (71 species) are neotropical migrants, and 39% (101 species) are temperate migrants. The most abundant resident landbirds on Fort Belvoir are the red-bellied woodpecker (*Melanerpes carolinus*), American crow (*Corvus brachyrhynchos)*, tufted titmouse (*Parus bicolor*), northern cardinal (*Cardinalis cardinalis*), and American goldfinch (*Carduelis tristis*). The most abundant resident waterbirds are the great blue heron (*Ardea herodias*), Canada goose (*Branta canadensis*), green-winged teal (*Anas crecca*), mallard (*Anas platyrhynchos*), and Forster's tern (*Sterna forsteri*). During the winter, common temperate migrants at Fort Belvoir include the American robin (*Turdus migratorius*), yellow-rumped warbler (*Dendroica coronata*), dark-eyed junco (*Junco hyemalis*), ring-billed gull (*Larus delawarensis*), and white-throated sparrow (*Zonotrichia albicollis*). Abundant neotropical migrants include the black-throated blue warbler

(*Dendroica caerulescens*), black-throated green warbler (*Dendroica virens*), blackpoll warbler (*Dendroica striata*), American redstart (*Setophaga ruticilla*) and rose-breasted grosbeak (*Pheucticus lucovicianus*), which stop over at Fort Belvoir during migration, but do not breed here. The most abundant neotropical migrants breeding on Fort Belvoir include the red-eyed vireo (*Vireo olivaceus*), Acadian flycatcher (*Empidonax virescens*), ovenbird (*Seiurus aurocapillus*), woodthrush (*Hylocichla mustelina*) and indigo bunting (*Passerina cyanea*)[6].

Of the 263 bird species on Fort Belvoir, 99 species (38%) are known to be "common" or "abundant" at the times they occur on post (Fleming, 1998). This indicates that Fort Belvoir affords large areas of suitable habitat for a significant percentage of the installation bird species. Key habitat features on Fort Belvoir include the large contiguous areas of undeveloped land, the landscape of varied ecological communities (e.g., freshwater tidal marsh that is used by killdeer, greater and lesser yellowlegs, spotted sandpiper, and least sandpiper); the early successional old-field habitats used by prairie warblers and field sparrows; the later successional old-field habitats used by yellow-breasted chat, white-eyed vireo and eastern towhee; the forested wetland/riparian forest used by the prothonotary warbler, Kentucky warbler, Acadian flycatcher, yellow-throated vireo, Carolina chickadee, and Louisiana waterthrush; the upland hardwood forest used by the woodthrush, worm eating warbler, eastern wood peewee, and scarlet and summer tanagers; and the abundance of food sources (e.g., soft-bodied insects, seeds, berries, aquatic invertebrates). These natural resources, together with Fort Belvoir's position along the Potomac River corridor, enhance the installation's attraction for both resident and migrant species.

Fort Belvoir supports a significant number of bird species of management concern. Table 12.2 presents the Fort Belvoir bird species considered by DCR-NHP to be rare within Virginia; Table 11.2 presents the PIF priority species for conservation that exist on Fort Belvoir. Table 11.3 presents the PIF high priority species known to breed on Fort Belvoir for which ENRD intends to actively preserve and enhance habitat. DCR-NHP bases its ranking upon the status of the breeding population within Virginia. PIF focuses on migrant and resident land bird species, and bases its ranking upon an assessment of habitat conditions and the species' population throughout the entire range[7] (Hunter et al., 1994; Carter et al., 2000). Fort Belvoir is in the process of preparing a Bird Conservation Plan for the installation).

The only federally or state-listed threatened or endangered bird species resident to Fort Belvoir is the bald eagle (federally-listed threatened and state-listed endangered). The state-endangered peregrine falcon[8] occurs infrequently on post[9], but is not considered to be a resident.

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[6] Neotropical migratory bird species breed in North America, but migrate to wintering grounds in Central and South America. Temperate migrants reside in North America year-round and typically breed in the northern U.S. and Canada, and winter in the southern U.S. Many of these species are undergoing population decline.

[7] The PIF species prioritization process designates a species a score of 1-5 for each of seven criteria: global abundance, winter distribution, severity of threats on the wintering grounds and migration routes, severity of threats of the breeding grounds, importance of the area to the species, and population trends in that region based on the North American Breeding Bird Survey.

[8] The peregrine falcon was removed from the federal endangered species list in August 1999.

| Table 11.2: Partners in Flight Priority Species Pool in Decreasing Order of Concern[a] | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Entry Level[b]* | *Species* | *Total Score* | *% of Pop.[c]* | *AI[d]* | *PT[e]* | *Regional Status[f]* | *Ft Belvoir Status[g]* |
| I | | | | | | | |
| A | Prairie Warbler | 25 | 5.9 | 5 | 5 | B | B |
| | Wood Thrush | 25 | 3.7 | 4 | 5 | B | B |
| | Kentucky Warbler | 24 | 1.6 | 3 | 5 | B | B |
| | Worm-eating Warbler | 24 | 2.9 | 3 | 3 | B | B |
| | Prothonotary Warbler | 23 | 1.7 | 3 | 3 | B | B |
| | Whip-poor-will | 23 | 4.0 | 4 | 4 | B | B |
| | Yellow-throated Vireo | 23 | < 1 | 3 | 5 | B | B |
| | American Black Duck | 22 | 1.6 | 4 | 2 | D | M |
| | Field Sparrow | 22 | 1.5 | 4 | 5 | D | D |
| | Hooded Warbler | 22 | 1.3 | 3 | 4 | B | B |
| | Scarlet Tanager | 22 | 2.4 | 4 | 4 | B | B |
| | American Woodcock | 23 | < 1 | 3 | 5 | D | D |
| B | Cerulean Warbler | 26 | < 1 | 2 | 3 | E | M |
| | Henslow's Sparrow | 25 | < 1 | 2 | 3 | B | PB |
| | Blue-winged Warbler | 23 | 1.1 | 2 | 4 | B | M |
| II | | | | | | | |
| A | Eastern Wood-Pewee | 21 | 2.2 | 5 | 4 | B | B |
| | Marsh Wren | 21 | < 1 | 3 | 5 | D | D |
| | Northern Bobwhite | 21 | 1.4 | 4 | 5 | R | R |
| | Brown Thrasher | 20 | < 1 | 4 | 4 | D | D |
| | Chimney Swift | 20 | 1.7 | 4 | 4 | B | B* |
| | Eastern Towhee | 20 | 2.3 | 4 | 5 | D | D |
| | Gray Catbird | 20 | 2.7 | 4 | 5 | D | D |
| | Virginia Rail | 20 | 2.3 | 5 | 3 | D | D |
| | Carolina Chickadee | 19 | 2.4 | 4 | 4 | R | R |
| | Eastern Kingbird | 19 | < 1 | 3 | 5 | B | B |
| | Yellow-billed Cuckoo | 19 | 1.1 | 4 | 4 | B | B |
| **B** | Acadian Flycatcher | 21 | 4.6 | 4 | 2 | B | B |
| | Forster's Tern (Virginia-SC) | 19 | 3.0 | 3 | 2 | B | M |
| | Pine Warbler | 19 | 3.7 | 4 | 2 | B | B |
| **C** | Louisiana Waterthrush | 21 | 1.8 | 3 | 3 | B | B |
| | Sedge Wren | 21 | < 1 | 2 | 3 | B | M |
| | White-eyed Vireo | 21 | 1.5 | 3 | 4 | B | B |
| | Grasshopper Sparrow | 20 | < 1 | 2 | 5 | B | PB |
| | Short-eared Owl | 19 | < 1 | 2 | 3 | D | W* |

[9] The peregrine falcon has been sighted during spring and fall migrations in the Accotink Bay area.

| Table 11.2: Partners in Flight Priority Species Pool in Decreasing Order of Concern[a] (continued) | | | | | | | |
|---|---|---|---|---|---|---|---|
| ***Entry Level[b]*** | ***Species*** | ***Total Score*** | ***% of Pop.[c]*** | ***AI[d]*** | ***PT[e]*** | ***Regional Status[f]*** | ***Ft Belvoir Status[g]*** |
| III | | | | | | | |
| | Chuck-will's-window | 20 | 1.2 | 3 | 2 | B | M |
| | Red-headed Woodpecker | 18 | <1 | 2 | 1 | D | D |
| **IV** | | | | | | | |
| | Bald Eagle (U.S.-T; Virginia-E; Maryland-E) | 16 | < 1 | 3 | 1 | R | R |
| **V** | | | | | | | |
| | Least Bittern (Maryland-E) | 18 | 3.6 | 2 | 3 | B | B |
| | Least Tern (Virginia, Maryland -SC) | 17 | 2.4 | 3 | 3 | B | M |
| | Dickcissel (Virginia-SC) | 20 | < 1 | 1 | 3 | B | PB |
| | King Rail (Maryland-T) | 20 | < 1 | 2 | 3 | D | D |
| | American Bittern (Maryland-E) | 18 | < 1 | 2 | 3 | D | D* |
| | Barn Owl (Virginia-SC) | 18 | < 1 | 2 | 3 | D | D |
| | Loggerhead Shrike (Virginia-E) | 18 | < 1 | 2 | 3 | E | PB, W* |
| | Common Tern (Maryland-SC) | 17 | 1.2 | 4 | 4 | D | M |
| | Northern Harrier (Virginia-SC) | 17 | < 1 | 2 | 2 | D | D* |
| | Peregrine Falcon (Virginia-E; Maryland-E) | 17 | < 1 | 2 | 3 | R? | M |
| | Red-eyed Vireo (Virginia-SC) | 17 | < 1 | 3 | 4 | B | B |
| | Yellow-crowned Night Heron (Virginia-T) | 17 | < 1 | 2 | 1 | B | M |
| | Black-crowned Night-Heron (Virginia-SC) | 16 | < 1 | 2 | 3 | D | D* |
| | Brown Creeper (Virginia-SC) | 16 | < 1 | 2 | 3 | D | D |
| | Pied-billed Grebe (Maryland-E) | 16 | < 1 | 2 | 3 | D | W |
| | Bank Swallow (Virginia-SC) | 16 | < 1 | 2 | 3 | B | B |
| | Common Moorhen (Virginia, Maryland-SC) | 15 | < 1 | 2 | 3 | D | M |
| | Great Blue Heron (Maryland-SC) | 15 | 1.5 | 4 | 1 | D | D |
| | Snowy Egret (Maryland-SC) | 15 | 1.4 | 2 | 3 | B | B* |
| | Spotted Sandpiper (Maryland-SC) | 15 | < 1 | 2 | 3 | B | M |
| | Hermit Thrush (Virginia-SC) | 14 | < 1 | 1 | 3 | W | W |
| | Caspian Tern (Virginia-SC) | 14 | < 1 | 2 | 1 | B | M |
| | Little Blue Heron (Virginia-SC) | 14 | < 1 | 1 | 3 | B | B* |
| | Great Egret (Virginia-SC) | 13 | 1.5 | 3 | 1 | B | B* |

Source: Eberly and Fischer, in preparation.

Table Notes:

[a] Values are for the Mid-Atlantic Coastal Plain for species that are known to occur on Fort Belvoir. Scores were developed from Partners in Flight criteria (Hunter et al., 1994; Watts, 1999; Carter et al., 2000).

[b] There are five entry levels into the priority species pool, as follows:

*Tier I*. HIGH CONTINENTAL PRIORITY. Species that are typically of conservation concern throughout their range. These are species showing high vulnerability in a number of factors, expressed as any combination of high parameter scores leading to an average score > 3 (the midpoint); total of 7 parameter scores will be $\geq$ 22, with AI $\geq$ 2 (so that species without manageable populations in the region are omitted).

*Tier I A*. HIGH CONTINENTAL PRIORITY - HIGH REGIONAL RESPONSIBILITY. Species for which this region shares in major conservation responsibility; i.e., conservation in this region is critical to the overall health of this species. Species with AI of 3 - 5, or a high percent population (above threshold in II B).

*Tier I B*. HIGH CONTINENTAL PRIORITY - LOW REGIONAL RESPONSIBILITY. Species for which this region can contribute to range-wide conservation objectives where the species occurs. Species with AI of 2.

*Tier II*. HIGH REGIONAL PRIORITY. Species that are of moderate continental priority, but are important to consider for conservation within a region because of various combinations of high parameter scores, as defined below; total of 7 parameter scores = 19-21.

*Tier II A*. HIGH REGIONAL CONCERN. Species that are experiencing declines in the core of their range and that require short-term conservation action to reverse or stabilize trends. These are species with a combination of high area importance and declining (or unknown) population trend; total of 7 parameters = 19-21, with AI + PT $\geq$ 8.

*Tier II B*. HIGH REGIONAL RESPONSIBILITY. Species for which this region shares in the responsibility for long-term conservation, even if they are not currently declining or threatened. These are species of moderate continental priority with a disproportionately high percentage of their total population in the region; total of 7 parameters = 19-21, with $\geq$ 5% of the global population.

*Tier II C*. HIGH REGIONAL THREATS. Species of moderate continental priority that are uncommon in a region and whose remaining populations are threatened, usually because of extreme threats to sensitive habitats. These are species with high breeding threats scores within the region (or in combination with high non-breeding threats outside the region); total of 7 parameters = 19-21 with TB + TN > 6, or local TB or TN = 5.

*Tier III*. ADDITIONAL WATCH LIST. These species are on the U.S. National Watch List not included in the above tiers. These species score highly enough based on global criteria to warrant conservation attention wherever they occur with an AI of 2 or more.

*Tier IV*. ADDITIONAL FEDERALLY LISTED. Species listed under the U.S. Endangered Species Act receive conservation attention wherever they occur.

*Tier V*. ADDITIONAL STATE LISTED. Species on state endangered, threatened, or special concern lists that did not meet any of above criteria. These are often rare or peripheral populations.

Species that are federally or state listed are noted on the Priority Species Pool by country and/or state using the following codes: E = Endangered, T = Threatened, SC = Special Concern.

[c] Percent of population – percent of range area, weighted by Breeding Bird Survey relative abundance (Rosenburg and Wells, 2000).

[d] AI (Area Importance) – a score of 5 indicates that the Mid-Atlantic Coastal Plain is of high importance to the listed species, decreasing numbers indicate decreasing importance.

[e] PT (Population Trend) – a score of 5 indicates that population numbers for the listed species are decreasing in the Mid-Atlantic Coastal Plain, decreasing numbers indicate less significant population decreases.

[f] Migratory status within the Mid-Atlantic Coastal Plain: B - species that breed but do not winter within the region (neotropical and temperate migrants), D - species that breed and winter in the region (but possibly different populations), E - breeding species reaching distributional limits, R - resident or non-migratory species, _? – status uncertain.

[g] Migratory status within Fort Belvoir: B - species that breed but do not winter on Fort Belvoir (neotropical and temperate migrants), PB - species that could breed on Fort Belvoir with appropriate habitat, D - species that breed

and winter on Fort Belvoir (but possibly different populations), R - resident or non-migratory species, M - species that migrate through Fort Belvoir, and W - species found on Fort Belvoir during the non-breeding season (winter) and possibly during migration. NOTE: D* and B* indicate species found during breeding season and/or migration, but no evidence of actual breeding on Fort Belvoir; W* indicates species that historically occurred on Fort Belvoir during winter.

The Avian Inventory, Monitoring, and Management report produced by Fischer 2000 listed ten species of birds as high priority or entry level 1 breeding species on Fort Belvoir (Fischer et al., 2000). These ten species were detected during the breeding survey period and, at the time of the survey, were listed with PIF as having concern scores higher than 22[10]. Figure 11.1 shows the critical breeding and forage areas for the 10 species listed in Table 11.3.

**Table 11.3: High Priority Partners in Flight Species for the Mid-Atlantic Coastal Plain Documented as Breeders on Fort Belvoir 1998-1999.**

| *Entry Level*[*] | *Species*[†] | *PIF Score* |
|---|---|---|
| 1 | Wood Thrush | 25 |
| | Prairie Warbler | 25 |
| | Kentucky Warbler | 24 |
| | Acadian Flycatcher | 23 |
| | Yellow-throated Vireo | 23 |
| | Worm-eating Warbler | 23 |
| | Eastern Wood-Pewee | 22 |
| | White-eyed Vireo | 22 |
| | Prothonotary Warbler | 22 |
| | Louisiana Waterthrush | 22 |

Source: Fischer et al., 2000.

[*]Entry Level I. High overall (global) priority - species scoring 22 or higher in the PIF prioritization system. Indicates high vulnerability of populations throughout the species range, irrespective of specific status in the physiographic area. Species without manageable populations in the area (peripheral) are omitted.

[†]Species do not match those listed in Table 11.2 due to changes in PIF priority species listings after the completing of the Fischer, 2000 report.

### 11.2.3 Reptiles

The reptile species present at Fort Belvoir have been well-documented through various field surveys (Table 11.1). The data provide an inventory of reptile species occurring or potentially occurring on the installation; however, study limitations preclude detailed abundance and distribution analysis. Reptile surveys include the series of reptile baseline field surveys conducted by George Mason University from 1987 through 1994; a field study by Dr. Joseph Mitchell from

[10] After the submittal of the Fischer report, PIF updated its Mid-Atlantic Coastal Plain priority species scores and removed or added several species to the entry level 1 list (the most current list is reflected in Table 11.2). Despite this change to the PIF list, the ten species listed in Table 11.3 are of management concern on Fort Belvoir and their breeding habitat will continue to be maintained and enhanced.

1995-1996 to test amphibian survey techniques[11], and various herpetological sampling events by installation personnel from 1988 through 1994[12]. The results of the George Mason University studies were published in the *Bulletin of the Maryland Herpetological Society*, as "The Amphibians and Reptiles of Fort Belvoir and Northern Virginia" (Ernst et al., 1997a). Dr. Mitchell's data are published in *Amphibian Decline in the Mid-Atlantic Region: Monitoring and Management of a Sensitive Resource* (Mitchell, 1998). Dr. Mitchell's data and installation staff reptile data are on file at the ENRD office. Data from these surveys have been incorporated into the installation GIS.

Thirty-two species of reptiles have been identified as occurring or likely to occur, on Fort Belvoir: 10 turtles, 18 snakes and four lizards. These species are all typical of the northern Virginia upper Coastal Plain, although several are at the limits of their ranges (e.g., wood turtle (*Clemmys insculpta*), a state-listed threatened species at the southern limit of its range; and the pond slider turtle (*Trachemys scripta*), river cooter (*Pseudemys concinna*), and ground skink (*Scincella lateralis*) at the northern limits of their ranges). Appendix D, Table D.4 presents more-specific information on the abundance and habitats of Fort Belvoir reptiles.

The 18 endemic snake species occur in all habitat types at Fort Belvoir. Aquatic snakes include the northern water snake (*Nerodia sipedon*). Terrestrial species occurring in more xeric habitats include common kingsnake (*Lampropeltis getulus*), queen snake (*Regina septemvitta*), ribbon snake (*Thamnophis sauritus*), corn snake (*Elaphe guttata*) and northern black racer (*Coluber constrictor*). Snakes of moist deciduous woodlands include eastern worm snake (*Carphophis amoenus*), northern ringneck snake (*Diadophis punctatus*), and black rat snake (*Elaphe obsoleta*). The only venomous snake endemic to Fort Belvoir is the copperhead (*Agkistrodon contortix*), which occurs in moist deciduous/mixed woods. The timber rattlesnake (*Crotalus horridus*) and the cottonmouth, or water moccasin (*Agkistrodon piscivorus*) are not native to the northern Virginia area.

Many of the snakes of Fort Belvoir are fairly secretive (e.g., the eastern hognose snake (*Heterodon platyrhinos*), which spends much of its time underground in sandy soils, and the eastern kingsnake (*Lampropeltis getulaus getulaus*), which is predominantly nocturnal. Consequently, these species are not well described for Fort Belvoir. Anecdotal observations indicate that snakes experience a high mortality from predation (e.g., larger snakes, raptors) and by road kills. Management actions in the past have been limited to relocation of individual animals from occupied structures when they pose a problem or safety concern, and capture and removal of exotic species (e.g., boa constrictors) from the installation.

The ten species of turtles present or potentially present on Fort Belvoir occur in association with water. The most common turtle on post, the snapping turtle (*Chelydra serpentina*), as well as the stinkpot (*Sternotherus odoratus*), eastern mud (*Kinosternon subrubrum*) painted turtle (*Chrysemys picta*), redbelly turtle (*Chrysemys rubriventris*), spotted turtle (*Clemmys guttata*),

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[11] Although this was an amphibian survey, ancillary observations and data on reptiles were obtained by Dr. Mitchell throughout it.

[12] Since 1995, Fort Belvoir has been performing field surveys to monitor wildlife movement through the wildlife underpasses along the Fairfax County Parkway on Fort Belvoir.

and pond slider turtle (*Trachemys scripta*) are all aquatic species that tend to occur in shallow, slow moving waters with mud bottoms. The eastern river cooter (*Chrysemys concinna*), not captured but considered possible at Fort Belvoir, is an aquatic species of faster moving waterways. The eastern box turtle (*Terrapene carolina*), a terrestrial species of woodlands, will occupy wet areas during dry periods.

The wood turtle (*Clemmys insculpta*), a state-listed threatened species, occurs at Fort Belvoir (Section 12). Several individuals of this species have been observed at various locations along the Dogue Creek and Accotink Creek drainages, indicating an on-post population). The spotted turtle, while abundant on Fort Belvoir, is decreasing throughout Virginia and it is possible that it will be added to Virginia's list of threatened species.

Field observations indicate that turtles experience high mortality on post from road kill and from predation. Raccoons, foxes, skunks, and snakes all prey upon turtle eggs. Young turtles are preyed upon by these animals, as well as by predatory fishes and various birds. Turtles of all ages appear to be a major prey of raptors such as bald eagles.

The four lizards occurring on Fort Belvoir include the five-lined skink (*Eumeces fasciatus*), the broad-headed skink (*Eumeces laticeps*), and the ground skink (*Scincella lateralis*), all of which occupy mesic, deciduous or deciduous/mixed woods; and the northern fence lizard (*Sceloporus undulatus*), which occupies drier, open areas. All of these species require habitats with debris/structures for cover and basking.

### 11.2.4 Amphibians

The amphibian species present at Fort Belvoir have been well documented (Table 11.1). As noted for reptiles, the studies do not provide information on populations or distribution of amphibians on post. Fort Belvoir has gathered information on amphibians through several surveys including the 1987 through 1994 baseline reptile and amphibian field surveys performed by George Mason University, the 1995 to 1996 amphibian survey technique study performed by Dr. Joseph Mitchell of the University of Richmond, and the 1988 through 1994 in-house reptile and amphibian surveys (as discussed in the reptile section above). Amphibian data have been incorporated into the installation GIS.

Twenty-seven species of amphibians have been identified as occurring, or potentially occurring, on Fort Belvoir: 11 frogs, three toads and 13 salamanders. These species are all typical of the northern Virginia upper Coastal Plain, although several are at the limits of their range. These include the green tree frog (*Hyla cinerea*), southern leopard frog (*Rana utricularia utricularia*), and three-lined salamander (*Eurycea longicauda*), which are at their northern limits. The Jefferson's salamander (*Ambystoma jeffersoniarum*) is within the southern limit of its range. The wood frog (*Rana sylvatica*) and the longtail salamander (*Eurycea longicauda longicauda*) are within their eastern limit. Appendix D, Table D.5 presents more-specific information on the abundance and habitats of Fort Belvoir amphibians.


# PARTNERS IN FLIGHT HIGH PRIORITY BREEDING BIRD HABITAT on FORT BELVOIR

SOURCE: FISCHER et al., 2000; UNPUBLISHED DATA

FIGURE: 11.1

The two toads identified at Fort Belvoir are the American toad (*Bufo americanus americanus*), which is widespread and inhabits brushy, damp areas and the Fowler's toad (*Bufo woodhousei fowleri*), which occurs in sandy soils. The eastern spadefoot toad (*Scaphiopus holbrooki holbrooki*), while not identified on the installation, is reported on the Mason Neck peninsula to the south. This species occurs in sandy lowlands.

The 11 frog species occur in habitats associated with water. The bullfrog (*Rana catesbeiana*) and pickerel frog (*Rana palustris*) are aquatic species. The upland chorus frog (*Pseudacris feriarum feriarum*) (a rare species in decline) and the wood frog (*Rana sylvatica*) occur in wetland woods and mesic woods, respectively. The remaining frog species, northern cricket frog (*Acris crepitans crepitans*), northern spring peeper (*Pseudacris crucifer crucifer*), Gray tree frog (*Hyla chrysoscelis*), Copes gray tree frog (*Hyla versicolor*), green frog (*Rana clamitans clamitans*), green tree frog (*Hyla cinerea*) and southern leopard frog occupy various terrestrial habitats (e.g., grassy, brushy, wooded) near water.

Although 13 salamander species were recorded on Fort Belvoir, four were not observed on the installation but are believed to be present. These include the eastern mud salamander (*Pseudotriton montanus montanus*), longtail salamander and three-lined salamander, which were not collected at Fort Belvoir, but are considered likely to occur; and the Jefferson's salamander, which is considered possible, but not likely to occur. Of the installation salamanders, only the redback salamander (*Plethodon cinereus*) and slimy salamander (*Plethodon glutinosus*) are considered terrestrial species. All of the other salamanders spend part or all of their adult lives closely associated with water (e.g., dusky salamander [*Desmognathus fuscus fuscus*] in flowing brooks, spotted salamander [*Ambystoma maculatum*] in woodland ponds, four-toed salamanders [*Hemidactylium scutatum*] in seepages in woods).

Amphibians have complex habitat requirements because of their dual life histories, living part of their lives in aquatic environments and part of their lives in terrestrial environments. The natural mosaic of aquatic and woodland habitats at Fort Belvoir, including the extensive wetland areas, woodlands traversed by extensive drainage systems, and ephemeral ponds (including man-made depressions, such as ditches and tire ruts along the unpaved training area roads) provide extensive areas of suitable amphibian habitat. Microhabitat conditions (e.g., extensive leaf litter, woodland debris, such as fallen logs, and undercut banks in the natural areas on-post) enhance the quality of this habitat. Fort Belvoir's relatively rich amphibian population is vulnerable to losses from predation, climatic and/or physical land surface changes (e.g., development, loss of cover) that cause loss of surface waters or loss of natural ground-level humidity at the forest floor, fragmentation of habitat, and disruption of natural travel corridors.

## 11.3 WILDLIFE MANAGEMENT

### 11.3.1 Wildlife Management Recommendations

Fort Belvoir is coordinating with DoD's Partners in Flight Program (PIF) to prepare a Bird Conservation Plan for the installation (Eberly, in preparation). The plan will outline specific

management actions for the conservation of PIF Priority Bird Species. These management actions are being developed in accordance with the PIF *Mid-Atlantic Coastal Plain Bird Conservation Plan* (Watts, 1999). Recommendations within the draft plan include the following:

- Maintain enough forested wetland habitat to support a stable population of 10 to 15 prothonotary warblers, and 150 to 200 Acadian flycatchers. Adequate habitat for this species ensures adequate habitat for other priority bird species. Identify and conserve existing forested wetland blocks to prevent loss and degradation.

- Maintain enough upland forest habitat to support a population of 600 wood thrushes. Adequate habitat for this species ensures adequate habitat for other priority bird species. Identify and conserve existing contiguous blocks of upland forest.

- Continue to maintain hardwood forests on Fort Belvoir. Hardwood-dominated forests near the fall line are of particular conservation significance to a diverse breeding-bird community.

- Create and maintain enough open grassland to support 10 pairs of grasshopper sparrows. Adequate habitat for this species ensures adequate habitat for other priority bird species.

- Create and maintain enough successional/shrub-scrub habitat to support 50 prairie warblers. Adequate habitat for this species ensures adequate habitat for other priority bird species.

- Perform a biological assessment to evaluate the effects of converting grassland patches less than 10 hectares (25 acres) in size to shrubland. Shifting the management of these lands from grasslands to shrublands would greatly increase the availability of habitat for shrub-dependent birds within the region.

- Ensure that grassland and shrubland management activities do not conflict breeding bird activity by placing restrictions on grassland management activities during June through August, and by conducting shrubland management activities on a four-year cycle between early April and mid-May.

- Coordinate with Huntley Meadows Park, Virginia; Potomac River National Wildlife Refuge, Virginia; Fairfax County, Virginia, Prince Georges and Charles Counties, Maryland; other local DoD installations; and other government organizations to ensure that goals and management actions for migratory birds are consistent.

### 11.3.2 Wildlife Management Actions to Date

Fort Belvoir manages its wildlife resources in accordance with the resource conservation and multiple use requirements of the Sikes Act, DoDI 4715.3, and AR 200-3. Management actions to date have prioritized conservation of ecologically significant wildlife resources, while supporting the military mission and providing public access to installation wildlife resources (as long as the access is consistent with the military mission and resource conservation).

Fort Belvoir follows an ecosystem-based approach to wildlife management. In establishing wildlife management policies and identifying and selecting management actions, Fort Belvoir addresses the installation's biological resources in terms of their landscape setting (local, regional, and national). Fort Belvoir's overall wildlife management policy is to conserve and enhance healthy native wildlife communities, rather than emphasizing single-species[13] or game-species management or production[14].

Fort Belvoir's management program recognizes the importance of understanding native habitats, and managing or responding to the forces that influence those habitats. Fort Belvoir's management program focuses on (1) conserving natural habitats in the size and configuration that best supports native wildlife populations; (2) eliminating, minimizing, or offsetting habitat disruptions such as forest fragmentation and damage by overabundant species; (3) enhancing habitat conditions for species and suites of species having recognized conservation priority, such as threatened, endangered, and PIF priority bird species; and (4) using indicator species to evaluate and set priorities for manipulation of habitat conditions.

Fort Belvoir's wildlife management program stresses balancing public access to and use of wildlife resources with preservation of functional ecosystems. Public access to wildlife habitats is provided in the two installation refuges and along much of the approximately 12 miles of the installation's shoreline. Fort Belvoir allows public access to these areas for a variety of low-intensity recreational uses, such as wildlife viewing, hiking, and nature photography, as well as for hunting and fishing. Fort Belvoir offers a variety of environmental education programs and events (e.g., guided bird walks), and hosts educational programs and events run by other organizations (including activities with "Partners in Education" schools and the Fairfax Audubon Society), in the refuges (Section 13). Fort Belvoir also provides the public with opportunities for recreational hunting (bow hunting) and fishing on post. The current relationship between wildlife management and recreational hunting maximizes hunter opportunity to reduce an overabundant deer population. Season, harvest and area limits that will allow use of archery equipment to effectively reduce the deer population are selected. Hunting is an effective management tool to achieve population levels that are most beneficial to a given species (e.g., populations that minimize the potential for disease problems), and that do not adversely affect other species or

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[13] However, there are specific instances where single-species management is appropriate. For example, compliance with the Endangered Species Act requires management actions for individual listed species.

[14] It should be acknowledged that Fort Belvoir maintains a large number and variety of nest box/platform structures (e.g., bluebird boxes, wood duck boxes, owl and kestrel boxes, bat boxes, martin houses, osprey platforms, etc.). The nest box/platform projects were initiated years ago, prior to Fort Belvoir adopting its current broad-based wildlife program. While it appears that these nest enhancement projects focus on target species and therefore may not be consistent with the installation's present-day management philosophy, they have been shown to be used by most of their target species. The bluebird boxes and wood duck boxes are especially effective. Given the use of these structures by wildlife species that are not considered to be potential problematic species, it was decided to continue maintenance of the structures. If they were not to be maintained, they would have to be removed. The loss of nesting opportunities for wildlife species having some degree of conservation interest appeared not to be appropriate at this time. Fort Belvoir intends to consider evaluating the appropriateness of continuing the nest box structures program into the future.

their habitats. The Fort Belvoir hunting program is not intended to introduce or increase populations of game species.

Fort Belvoir's wildlife program honors the commitments made by DoD and the Department of Army to international and regional programs such as PIF and the Chesapeake Bay Program. The PIF Program is an international partnership that aims to focus resources on the improvement of monitoring and inventory, research, management, and educational programs involving birds and their habitats. DoD committed to this effort by developing a parallel DoD PIF Program. Fort Belvoir is working with the DoD PIF Program representative to prepare a Bird Conservation Plan for the installation (Eberly, in preparation). Fort Belvoir's management emphasis on PIF priority bird species will contribute to PIF goals for the Mid Atlantic Coastal Plain Physiographic Area.

Fort Belvoir's wildlife program also honors commitments made by DoD and DA to the Chesapeake Bay Program, a regional initiative that aims to preserve and restore the Chesapeake Bay and its watershed including its living resources. As a signatory partner of the 1994 and 1998 federal agencies' agreements, which are based upon the overall Chesapeake Bay Program goals, DoD and DA committed to be stewards of the Bay's living resources. Fort Belvoir's efforts to conserve and enhance healthy native wildlife communities directly contribute the living resource goals of these Agreements and the overall Chesapeake Bay Program.

Wildlife management actions to date at Fort Belvoir include:

- Wildlife data collection (baseline and monitoring studies)
- Native wildlife habitat conservation and enhancement
- Preservation of wildlife movement corridors
- Prohibition of introductions of non-native wildlife species and release of domestic species
- Removals of feral animals from the wild
- Population management for select species (i.e., overabundant species such as deer)
- "Problem"[15] and dangerous wildlife control
- Wildlife disease monitoring and treatment
- Education, outreach, and training
- Partnering on regional wildlife management actions, such as participation the Fairfax Deer Management Committee.

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[15] "Problem" refers to any individual or species that causes damage to or interferes with humans and other wildlife, including wildlife habitat. Problem species in this context are identified on a case-by-case basis by Fort Belvoir natural resources staff and do not necessarily meet the Virginia Department of Game and Inland Fisheries definition of nuisance species.

The following sections present specific information on Fort Belvoir's wildlife management actions to date. Management actions for endangered and threatened species (i.e., bald eagle, wood turtle, and peregrine falcon) are addressed in Section 12.

### *11.3.2.1 Habitat Conservation*

The broadest management action within Fort Belvoir's wildlife program has been setting aside large blocks of natural area for conservation (Section 13). Fort Belvoir has designated two installation refuges (ABWR and Jackson Miles Abbott Wetland Refuge [JMAWR]), totaling 1,506 acres and the Fort Belvoir Forest and Wildlife Corridor, for an additional 742 acres (Figure 4.1), all of which are designated as conservation areas within the Fort Belvoir Master Plan (Woolpert, 1993a). Specifically, the Fort Belvoir Master Plan designates the installation refuges and the Forest and Wildlife Corridor, as well as all steep-sloped areas (many of which are adjacent to the installation riparian areas) and wetlands as "environmentally constrained to development." This designation has been effective at safeguarding valuable wildlife habitat from loss to development, and at preserving functioning wildlife movement/migratory routes within and through the installation. Management actions for the installation refuges and corridor are addressed in Section 13.

### *11.3.2.2 Mammal Management*

As documented through the baseline surveys, Fort Belvoir supports a fairly diverse mammal community. The baseline survey results indicate that the installation's mammal species are typical to the Northern Virginia area, and that these species appear to be present at the levels of abundance that one would expect for undisturbed habitat in this area[16]. The baseline surveys do not indicate a need for any species or habitat-specific management recommendations for mammals.

The principal management need identified through the baseline surveys is the need to (1) preserve native wildlife habitat on Fort Belvoir, and (2) preserve wildlife movement/migratory corridors within and through the installation. Ernst et al. (1988) documented an area running from the northeast to the southwest through the installation that supported movement of mammals, as well as amphibians and reptiles. This report also documented shorter, more-localized wildlife movement routes along stream corridors within the installation (Figure 11.2). The results of this work led to the establishment of the Fort Belvoir Forest and Wildlife Corridor (Section 13).

Fort Belvoir, as is presently true throughout all of Northern Virginia, has an overabundant deer population. The results of the annual deer spotlight surveys (Figure 11.3 shows the survey route) for the past 5 years estimate the population to be between 800 and 1,000 deer, or 50 to 70 deer per square mile. This density is well above the level that can be supported in good physical condition over an extended period of time and far above the target population level set by Fairfax County (8 to 15 deer per square mile) (Fairfax County, 2000b). The over-population of deer is of management concern not only for the deer themselves, but also for other wildlife. A large deer

[16] Normalcy of abundance is based on judgement of natural resources managers at Fort Belvoir rather than data analysis.

population increases the risk for human safety and health issues due to vehicle collisions and disease. Overbrowsing reduces habitat quality for more than just deer, and coincides with a decline in herd health. This decline includes lowered body weights, increased parasitism, and increased disease prevalence. In the absence of marked herd reduction, neither herd health nor habitat quality will improve, as each constrains the other (Deer Management Planning Committee, 1999). Fort Belvoir recognizes the need to manage toward reduction in the size of the installation's deer herd.

Fort Belvoir recognizes that deer hunting is the only effective, practical and adaptive method available for deer population management. Consequently, Fort Belvoir is using deer hunting, through a bow hunting-only program, as the installation's primary deer management tool[17]. Fort Belvoir uses regulated hunting to manage the effects of deer on other plant and animal communities, and to reduce urban (e.g., vehicle collision, landscape damage), ecosystem, forestry and other types of deer damage. Fort Belvoir's herd reduction goal, which is consistent with Virginia's Deer Management Plan (Deer Management Planning Committee, Virginia Department of Game and Inland Fisheries, 1999), is intended to manage deer at a level most compatible with local social, economic, political and biological needs, and to preserve native wildlife habitat. In other words, conservation of the installation's biodiversity is the primary purpose of the Fort Belvoir deer hunting program; providing opportunities for recreational hunting is secondary. Organizational responsibilities regarding the deer hunting program are specified in the Fort Belvoir Supplement to AR 200-3 (Appendix H). Additionally, DIS issues an annual Hunting Fact Sheet (Appendix O).

Fort Belvoir has participated in Virginia's Deer Management Assistance Program (DMAP) since 1987. In 2000, Fort Belvoir began participating in Virginia's Deer Population Control Program (DPOP). These site-specific programs allow more-liberal harvest of anterless deer than what could be obtained under the existing system of county regulations. Fort Belvoir is also a participant in the Fairfax County Deer Management Committee regarding regional deer management efforts. Deer harvest levels at Fort Belvoir for the past 5 years have increased annually ranging from 179 to 250. Exclusive use of archery tackle for hunting has proven effective in stabilizing the installation's deer population level; however, greater harvest levels are needed to reduce the herd size. It is our intention to continue archery only hunting, increasing hunter success through the DMAP and DPOP, to move from herd maintenance to population reduction. This approach will meet safety constraints and maximize the recreational value of urban hunting.

Deer can present a safety hazard to aircraft operations at Davison Army Airfield. For the past five years, Fort Belvoir has operated under official kill permits from Virginia Department of Game and Inland Fisheries to remove deer from Davison Army Airfield as needed in response to airfield safety issues.

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[17] The bow hunting program also allows for taking squirrel, woodchuck, fox, and raccoon, which are considered to be overabundant species on post. In 2000, at the request of the hunting community and with support from VDGIF, Fort Belvoir added turkey to the list of species that may be taken during the deer bow hunting season. This was purely a recreational decision; turkey are not considered an overabundant species on Fort Belvoir.


# FISH and WILDLIFE MIGRATORY ROUTES on FORT BELVOIR

SOURCES: EA, 1999d; UNPUBLISHED DATA

FIGURE: 11.2


HUNTING AREAS and
DEER SPOLIGHT SURVEY
ROUTE on FORT BELVOIR

SOURCE: HUDSON, UNPUBLISHED DATA

FIGURE: 11.3

Fort Belvoir supports periodic deer herd health checks by VDGIF. VDGIF undertakes herd health checks on a periodic basis, no less frequently than once every 5 years. The most recent herd health check was undertaken in March 1999. The results indicated overall "poor" condition, which is typical in overpopulated areas (Lovelace, 1999). In 1999, Fort Belvoir coordinated with Virginia Department of Game and Inland Fisheries in responding to a statewide increase in epizootic hemorrhagic disease.

Raccoon are a species of management concern because of their association with rabies. In 1999, Fort Belvoir began participating in a program with Fairfax County to test the effectiveness of oral rabies vaccination on raccoons. Extensive data on raccoon population, movement and health conditions were collected. Rabies vaccination baits were distributed on Fort Belvoir in the spring of 2000 and again in the fall of 2000. A post-treatment survey indicated that 37% of the installation's raccoon population was successfully vaccinated after the spring 2000 distribution. A post-treatment survey for the fall 2000 distribution will be conducted in winter 2000. It is expected that other species, such as striped skunk, red fox and gray fox also received treatment; however, because these species are not target species in the study, they are not being evaluated in the post-treatment surveys.

Woodchuck are a species of management concern because of their potential for damage to structures, utilities and landscape materials. Fort Belvoir's management actions to date for woodchuck have been to trap and relocate or euthanize individuals determined to be causing problems or posing safety risks.

Beaver are another species of management concern because of their ability to alter habitats and impact man-made structures. To date, Fort Belvoir's management approach for beaver has been to control the animal's activity rather than control its population. Management actions are site-specific, such as installation of beaver guards on trees and on wildlife nest box structures to prevent gnawing, and installation of beaver guards on culverts to prevent damming. Various ecological surveys of Fort Belvoir caution that beaver have the potential to negatively impact habitat for several rare species and plant communities on post (Hobson, 1996; McCoy and Fleming, 2000). These surveys recommend monitoring beaver activity, and undertaking control actions if necessary.

Other species of management concern because of their potential for disruption of installation activities or destruction of installation resources include the striped skunk, raccoon, house mouse, Norway rat and feral cats. Skunks, raccoons, and all other native mammals are handled on a case-by-case basis when they become a problem. Fort Belvoir removes the house mouse and Norway rat to control damage.

Feral cats pose a significant threat to native wildlife populations, and pose a safety hazard to installation personnel and their pets due to disease. Scientists estimate that hundreds of millions of birds and small wildlife are killed each year by free-roaming domestic cats (American Bird Conservancy, undated). DoD Instruction 4150.7-1 requires military facilities to use the Armed Forces Pest Management Board Technical Information Memorandum No. 37, *Guidelines For Reducing Feral/Stray Cat Populations On Military Installations In The United States*, as

guidance for their feral cat programs. In accordance with this Memorandum Fort Belvoir Regulation 40-905, *Animal Control* (U.S. Army, 2000c) prohibits the release of domestic animals on post, and establishes guidelines for capturing and removing feral animals. This regulation applies to all persons residing on, employed by, serving on, or visiting Fort Belvoir, and it is enforceable by the Fort Belvoir game warden and military police. Fort Belvoir's feral cat management to date has been to trap and remove feral cats from the wild. Individual feral cats that can be rehabilitated are put up for adoption; those that cannot are euthanized.

#### *11.3.2.3 Bird Management Actions*

As of 2000, Fort Belvoir is completing its third year of installation-wide bird monitoring. This effort has been extremely valuable in identifying and evaluating the bird species and their habitat associations at Fort Belvoir. The results of this survey effort document that Fort Belvoir supports a highly diverse bird community, including a significant number of bird species of management priority. The study results leave no doubt as to the high value of Fort Belvoir's natural habitat to migratory bird communities at the regional, national and international levels.

Until 1999, Fort Belvoir's bird-habitat enhancement actions were limited to installing and maintaining nest box structures (e.g., bluebirds, wood ducks, owls, kestrels, prothonotary warblers) and osprey nest platforms; converting manicured lawn areas to old field conditions; and using wildlife seed mixes when re-seeding disturbed areas such as utility rights-of-way and closed landfills.

In 1999, Fort Belvoir began coordination with the PIF program to develop specific management actions for PIF priority bird species on post. The Avian Inventory, Monitoring, and Management report (Fischer, 2000) identified 10 high priority PIF bird species that breed on Fort Belvoir (Table 11.3). These 10 species have varied habitat requirements. Some, like the wood thrush, require large tracts of undisturbed forest. Others, like the prairie warbler, require areas of early successional vegetation (i.e., a mix of grass with shrub/scrub woody vegetation). Figure 11.1 shows the critical breeding and forage area for the 10 PIF priority bird species. Management actions for forest dwelling species can be accomplished through the conservation of the large forest tracts presently occurring on Fort Belvoir and controlling fragmentation. However, management actions for the prairie warbler and other early successional dwelling species, require active management to maintain sufficiently sized areas of early successional vegetation. Since early successional vegetation is a transitional vegetation type, intervention is required to preclude this type from being replaced by forest cover. Fort Belvoir is coordinating with the DoD PIF Coordinator to identify specific installation areas for maintenance as early successional habitat and to develop the appropriate management regime (Eberly, in preparation). While these management actions (i.e., conservation of interior forest habitat and maintenance of early successional habitat) have been selected to support PIF priority bird species, Fort Belvoir recognizes that they will benefit other wildlife species on post.

The results of the bird surveys indicate that the cowbird, a nest parasite that poses a significant threat to nesting migrants including several of the PIF priority species breeding on Fort Belvoir, occurs throughout the installation and extends into all forest tracts on post. Cowbirds benefit from fragmentation, which occurs throughout the installation. The installation bird surveys

(Fisher et al., 1999) recommend eliminating excessive areas of fragmentation to control cowbird intrusion into the installation's forest tracts and to protect vulnerable migratory bird species from nest predation.

Fort Belvoir has, as does all of northern Virginia, an overabundance of resident Canada geese. The ecological and societal problems resulting from an overabundance of geese are well-documented (Nelson and Oetting, 1998). At Fort Belvoir, geese can also present a serious threat to airfield safety at Davison Army Airfield. In 1999, in coordination with Davison Army Airfield, Fort Belvoir developed and implemented a goose hazard management program for the airfield. This program relies upon harassment by trained border collies, use of bird distress recordings and noise cannons, and habitat manipulation (e.g., maintaining tall grass along runway areas and eliminating open water areas within the airfield's wetland mitigation site) to deter geese. Davison Army Airfield maintains a Bird Aircraft Strike Hazard Plan; Fort Belvoir ENRD is responsible for implementing wildlife management actions at the airfield. Control of geese elsewhere on the installation where they pose a problem (i.e., North Post golf course and DLA Headquarters facility) is done through harassment by trained border collies.

Other than geese, bird problems during the past five years tend to be site-specific instances. While the Defense Logistics Agency headquarters building experienced a pigeon problem because the building's design included extensive ledge areas, most bird problem situations tend to occur when a bird enters an occupied structure, or constructs a nest on the ground in a high-traffic area or on a structure where they interfere with installation operations. These instances are handled by relocating the birds, as necessary and in accordance with federal regulations. There have been occasions when ospreys have constructed nests on facilities and interfered with operations, or presented potential facilities maintenance risks. These situations are handled on a case-by-case basis, and have included removal of nest material during the non- nesting season, and the placement of nest excluders on structures to render the structures unsuitable for osprey nesting (e.g., specific types of electric poles where there is an electrocution hazard).

For the past decade, falconry has been the only hunting program for game birds. In 2000, at the request of the hunting community and with support from VDGIF, Fort Belvoir added wild turkey to the list of species that may be taken by bow hunting during the deer-hunting season. VDGIF (Gary Norman, 2000) advised that the incidental harvest of wild turkey during the deer-hunting season with archery tackle is not considered to have an effect on turkey population. VDGIF recommended that all hunters be required to record data from turkey sightings and from harvest, and that these data be submitted to the state. Fort Belvoir has placed this requirement on installation hunters. VDGIF also recommended re-evaluation of turkey hunting if the hunters are more successful that anticipated (Gary Norman, 2000).

Fort Belvoir has a draft West Nile Virus (WNV) Surveillance and Response Plan, which is being developed and coordinated through the Virginia Department of Health, the Metropolitan Washington Council of Governments Regional Health Officers Committee, Fairfax County, and the Fort Belvoir Environmental Health and Preventative Medicine Office. The program includes public awareness and education, ongoing surveys, and monitoring of high risk areas; preventative actions including personal precautions and reducing potential breeding sites; and larviciding during the breeding season. Dead birds are monitored as potential carriers of the WNV. Suspect

birds are sent to an authorized laboratory for testing. Fort Belvoir is making preparations for mosquito adulticiding in 2001 in the event that the WNV becomes a risk to residents.

#### *11.3.2.4 Amphibian and Reptile Management*

The results of the installation surveys indicate that Fort Belvoir possesses very diverse amphibian and reptile communities, including two rare species (Table 12.2). The installation survey results emphasize the importance of Fort Belvoir's natural habitat to the conservation of these species. The surveys document how land areas like Fort Belvoir are becoming islands of habitat essential for the continued survival of amphibians and reptiles. These species, with their limited ranges and complex habitat requirements, are highly vulnerable to the effects of urbanization.

Nationwide, amphibians are recognized as a group of animals experiencing population declines. Additional studies are needed at Fort Belvoir to ascertain whether similar declines are occurring on post. Dr. Joseph Mitchell, University of Richmond, developed a survey protocol for monitoring amphibian populations (Mitchell, 1998). This survey protocol might be appropriate to use at Fort Belvoir. Various other nationwide survey protocols exist that could also be used at Fort Belvoir. These include the North American Amphibian Monitoring program, FROGWATCH USA and PRIMENet Amphibian Monitoring Program. Information on these protocols can be found at the Patuxent Wildlife Research Center at http://www.mp1-pwrc.usgs.gov/amphibian_monitoring.html. In addition, a nationwide effort, Partners in Amphibian and Reptile Conservation, is underway to assess declines in all reptiles and amphibians, and uses the same approach as PIF in utilizing partnerships to more effectively approach conservation efforts.

At Fort Belvoir, the major threats to amphibians and reptiles are habitat loss and fragmentation, and chemical exposures. Amphibians are particularly vulnerable to habitat fragmentation where it eliminates the connectivity among their varied habitat types. Amphibian survival depends upon continuity among wet habitats as well as between upland and wet habitats. Fort Belvoir recognizes the importance of preserving this interface of habitat types. Amphibians are also highly sensitive to environmental chemical contamination, given their physiology and close association with soils and water. Fort Belvoir controls the potential threats from pesticides by following an Integrated Pest Management program (U.S. Army, 2000b) (Section 10). Another significant threat to amphibians is habitat disruption and degradation caused by stormwater management problems (e.g., sedimentation). Controlling this threat is a major factor in Fort Belvoir's stormwater management program (Section 7).

#### *11.3.2.5 Wildlife Enforcement*

Through its Memorandum of Agreement for Cooperative Law Enforcement between the U.S. Fish and Wildlife Service and the U.S. Army Garrison Fort Belvoir, dated 20 February 1996 (Appendix A), Fort Belvoir has one Special Agent within ENRD. The agreement is to provide mutual law enforcement benefits to the installation and to the Fish and Wildlife Service by sharing expertise, training, intelligence, information, and specialized equipment. The intent of this agreement is to provide the Special Agent with the authority to enforce all laws administered by the U.S. and the installation relating to fish, wildlife, and other natural resources. The agreement delegates authority to the Special Agent to enforce several specific federal laws on

Fort Belvoir including the following: Lacey Act Amendments of 1981 (16 U.S.C., 3371-3378), Migratory Bird Treaty Act (16 U.S.C. 703-712), Migratory Bird Hunting and Conservation Stamp Tax Act (16 U.S. C. 718-718h), Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d), Airborne Hunting Act (16 U.S. C. 742J-1), National Wildlife Refuge Systems Administrative Act (16 U.S.C., 668dd-668ee), Endangered Species Act of 1973 (16 U.S.C., 1531-1543), Marine Mammal Protection Act of 1979 (16 U.S.C., 1361-1384, 1401-1407), and Archeological Resources Protection Act of 1979 (16 U.S.C. 470a. (A)-(1) (A)).

## 11.4 CONTINUING AND FUTURE WILDLIFE MANAGEMENT

Fort Belvoir intends to continue the management emphasis and actions addressed in Section 11.3. Fort Belvoir will continue to conserve wildlife resources, while providing opportunities for public access to installation wildlife, as long as such access is consistent with the military mission and with resource conservation. Continued support to military training and testing will take priority. After that, management emphasis will be on conservation and enhancement of native resources in accordance with the Sikes Act, DoD and DA polices, and DoD and DA-partnered programs, such as the Chesapeake Bay Program and the PIF program. Fort Belvoir will continue to focus habitat conservation and enhancement actions on species with recognized conservation priority, and will continue to use indicator species to evaluate habitat enhancement needs and success. Fort Belvoir's natural resources management program will continue to promote public access to and appropriate use of wildlife resources and will continue to provide the public opportunities for recreation and for environmental education, and for scientific research and study of wildlife resources, consistent with resource conservation objectives. The natural resources management program will continue to be involved in local, regional and national level wildlife management initiatives and actions. Fort Belvoir will continue to use hunting as a wildlife management tool.

### 11.4.1 Wildlife Management Objectives

1. Protect against the loss of native diversity of Fort Belvoir's wildlife resources, as described by the planning level surveys.

2. Emphasize for conservation those wildlife species that have been prioritized for conservation by federal or state statute or regulation, DoD or DA policy (e.g., DODI 4715.3), DoD partnered programs (e.g., Chesapeake Bay Program, PIF Program), State Natural Heritage Program, or through recognized importance to regional ecosystem function. Use these species as "indicator species" for the development and implementation of habitat enhancement projects, consistent with the principles of ecosystem management:

   - Federal and state listed threatened or endangered species (bald eagle, wood turtle and peregrine falcon), and their habitat

   - State-listed rare animal species, and their habitat

   - PIF priority bird species.

3. Conserve and enhance native wildlife habitat conditions to ensure habitat areas are sufficiently sized, sufficiently positioned, and possess the appropriate conditions to support healthy, self-sustaining native wildlife populations.

4. Conserve and enhance wildlife movement/migration routes within and through Fort Belvoir.

5. Protect the military mission from hazard or disturbance by wildlife.

6. Protect the public from hazard or disturbance by wildlife.

7. Provide opportunities for public access for recreation and for environmental education and study consistent with resource conservation.

### 11.4.2 Wildlife Management Strategies

1. Develop a Fort Belvoir Wildlife Management Plan. The Wildlife Management Plan should include, but not be limited to, wildlife management objectives, and studies/surveys necessary to meet objectives, field survey protocols, analytic procedures, reporting and record keeping. The Wildlife Management Plan should identify the wildlife population and habitat management projects appropriate to meet management objectives. The Plan should also identify the metrics to be used to assess the success of the management actions.

2. Continue to obtain scientific information on installation wildlife resources to support our knowledge of their biodiversity; to identify stresses and detect changes to biodiversity, and to evaluate the effectiveness of management actions. Such actions include the following:

   - Complete the baseline planning level wildlife surveys (e.g., bat survey), and update the wildlife inventory information on a regular cycle (e.g., a 10-year cycle).

   - Continue to perform indicator species monitoring (e.g., bald eagle surveys, migratory bird surveys).

   - Continue to support outside entities performing established wildlife surveys on Fort Belvoir (e.g., Christmas Bird Count, by Audubon Society, and Monitoring Avian Productivity and Survivorship program, funded by DoD Legacy Program).

   - Perform wildlife studies and monitoring in accordance with the Fort Belvoir Wildlife Management Plan. Such studies are likely to include monitoring wildlife movement/migration through the installation, including wildlife use of existing wildlife crossing studies; monitoring the effects of wildlife (e.g., deer overbrowse) on habitat conditions (e.g., forest stratification, forest regeneration); monitoring the effects of predation (e.g., turtle nest predation). These types of studies and monitoring efforts will be developed and undertaken to determine the need for management actions, and to assess the success of management actions that have been undertaken.

- Develop and implement turkey surveys and harvest data collection to evaluate the effects of hunting harvest on the installation's turkey population.

- Continue to perform year-round surveillance (i.e., close observation, in lieu of studies or monitoring projects) of wildlife resources to detect disruptions.

- Perform localized and/or issue-specific wildlife studies, as needed to support resource management or for specific installation projects such as new land-use development.

- Continue to coordinate with USFWS, VDGIF, DCR-NHP, and other organizations involved with wildlife conservation, regarding stewardship recommendations for wildlife resources.

3. Complete and maintain the Fort Belvoir Wildlife Information System as a comprehensive database of installation wildlife information. Continue to integrate this database with the Fort Belvoir GIS.

4. Continue to set aside areas of ecologically significant wildlife resources, consistent with DoD policy for setting aside areas for conservation as "Special Natural Areas" (Section 13). As of 2000, Fort Belvoir has three such areas: two refuges and the Forest and Wildlife Corridor. Consider modifying the boundaries of the refuges and/or establishing a buffer for the refuges, to protect ecologically significant wildlife resources that presently are located outside the refuge boundaries. Consider modifying the Corridor boundaries to encompass known wildlife migratory areas presently located outside the Corridor boundary. Continue to designate these set-aside areas as "environmentally constrained to development" in the installation Master Plan.

5. Continue to implement actions to control threats to native wildlife habitat:

   - Continue to monitor and control invasive/exotic plant species to prevent displacement of native plant species, and consequent impacts on wildlife habitat.

   - Continue to conserve wetlands and riparian forest buffers.

   - Continue to implement watershed conservation and restoration actions.

   - Continue to monitor and control wildlife that cause significant habitat destruction/degradation.

   - Continue to manage pesticide use in accordance with the *Fort Belvoir Integrated Pest Management Plan* (U.S. Army, 2000b) to prevent pollution.

   - Continue efforts to avoid native habitat loss or fragmentation when siting and constructing new facilities on post.

6. Continue to implement installation-wide actions to enhance broad wildlife habitat conditions:

   - Use native wildlife seed mixes for re-seeding areas, as appropriate, to benefit wildlife.

- Reduce the location and frequency of mowing and grounds maintenance activities (e.g., leaf pick-up), as appropriate, to reduce disturbance and pollution pollution, and to promote more-natural habitat conditions.

- Remove abandoned impervious surfaces and replant with native, "wildlife friendly" plants, as appropriate.

- Enhance vegetation within disturbed riparian areas, using native plants.

- Replant disturbed areas within the Forest and Wildlife Corridor to enhance forest cover conditions.

- Implement maintenance/corrective actions within all installation wildlife crossing structures to maintain these structures free of impediments to wildlife movement.

- Implement grassland management actions to enhance native habitat conditions.

- Evaluate the effectiveness of Fort Belvoir's existing nest box program, and determine whether the program should be continued, modified or terminated. If the program is to be continued, develop a recommendation for a volunteer project(s) to assume responsibility for maintenance and data gathering.

- Evaluate and correct wildlife hazards, such as electrocution hazards, fence hazards, etc.

7. Consider implementation of grassland and early successional habitat enhancement/management projects identified for PIF priority bird species (Eberly, in preparation). In selecting projects for execution, evaluate them for their potential benefit to other wildlife of hunting interest (deer, turkey) as well as wildlife of conservation interest (amphibians).

8. Continue the Fort Belvoir deer hunting program, with participation in VDGIF's DPOP and DMAP.

    - Continue to perform data collection in support of the program:
        - Perform annual population census (e.g., annual spotlight survey).
        - Perform annual harvest data collection. This includes installation-specified data as well as VDGIF-required data.
        - Support VDGIF on herd health checks.
        - Support Veterinarian Services in disease data collection.
        - Collect road kill data.
        - Coordinate with VDGIF regarding other types of data collection, as appropriate.

    - Continue to set hunting season dates and harvest limits in coordination with VDGIF. Dates and limits will be set to best support maintenance of an installation deer population level most beneficial to herd health. Up through 2000, season dates and harvest limits were set to reduce herd size. These limits reviewed annually, because events and conditions, such as the 1999 outbreak of epizootic hemorrhagic disease,

may significantly impact population levels. Fort Belvoir may continue to request participation in DPOP, which allows for extended season to increase harvest. The recommendation to request participation in DMAP and DPOP is made by the Natural Resources Branch each year by July 15th.

- Continue to designate installation areas as open or closed to hunting, and continue to specify hunting area restrictions as needed for safety or resource-protection considerations (e.g., annual closing of T-10 and W-7 during the bald eagle nesting season). Explore opportunities for increasing hunter allotments to hunting areas. The recommendations for hunting areas opening and closing are made by the Natural Resources Branch.

- Continue to remove deer where they cause damage/safety risks. Deer removal is done under the kill permit. The recommendation to enact deer removal is made by the installation game warden.

- Continue to participate in the Fairfax County Deer Management Committee to develop and implement a regional program to control deer overpopulation.

- Continue to issue the Directorate of Installation Support Annual Hunting Fact Sheet.

- Continue to execute hunting program responsibilities in accordance with Fort Belvoir's Supplement to AR200-3. The Directorate of Installation Support is responsible for the biological/resource management aspects of the hunting program, as well as for enforcement. The Directorate of Personnel and Community Activities (DPCA) is responsible for the recreational aspects of the hunting program.

- Evaluate opportunities to provide hunting access and opportunities for persons with disabilities.

- Continue to coordinate with VDGIF regarding recommendations for deer management.

- Continue to allow for incidental take of other game species during deer season.

9. Continue the goose hazard management program for Davison Army Airfield. As long as it remains effective, Fort Belvoir will continue the present program of harassment by trained border collies, the use of noise devices, and maintenance of grass to a height that is less attractive to geese. If the program effectiveness decreases, Fort Belvoir will explore alternative controls with the USDA.

10. Continue feral cat control in accordance with DoD, DA and Fort Belvoir policy on feral cats, which call for the removal of feral cats from the wild, and the prohibition of release of cats to the wild. Fort Belvoir will not support the establishment and maintenance of feral cat colonies by any organization or individual.

11. Continue to support regional efforts for wildlife disease monitoring and control:

- Fairfax County's raccoon rabies treatment program.

- Fairfax County's West Nile Virus program.

12. Continue to review and respond to military (e.g., Directorate of Plans, Training, Mobilization, and Security; Davison Army Airfield; Reserves, etc.) requirements for wildlife management to reduce wildlife hazard/disturbance.

13. Continue to review and respond to tenant and AFH requirements for wildlife management to reduce wildlife hazard/disturbance.

14. Continue to review and respond to DPCA Outdoor Recreation Office requests for access to/use of wildlife resources for expansion of recreational opportunities (e.g., hunting, bird watching, wildlife art, etc).

15. Continue to review and respond to requests from the public for access to/use of wildlife resources for expansion of recreational opportunities (e.g., hunting, bird watching, wildlife art, etc).

16. Continue to use the installation project/activity review process to incorporate wildlife conservation requirements into all phases of facilities siting, construction, renovation, operation, maintenance and demolition activities; in reviewing and supporting military training and testing activities; and, in reviewing and responding to outdoor recreation, environmental education, scientific research and study, and all other types of access and use requests.

    - Review and revise, as needed, the Fort Belvoir *Environmental Protection Specifications* applicable to construction projects to ensure that they include wildlife protection provisions.

    - Review and revise, as needed, the Fort Belvoir Environmental Checklist to address wildlife protection.

    - Develop recommendations to revise the Installation Design Guide to include "wildlife sensitive" facilities siting, design and construction considerations.

    - Incorporate wildlife protection strategies into utilities privatization, and all other privatization and outsourcing actions, as appropriate.

    - Develop recommendations for a facilities siting/design review committee to include representatives from ENRD, Master Planning, and the Contract Management Division. The committee should develop and participate in a design review process to ensure consideration of wildlife protection.

    - Continue to include wildlife protection as part of the Excavation Permit and Demolition Permit review processes.

- Continue to include wildlife protection in all real estate actions (e.g., outgrants, leases, rights of entry).

- Continue to include wildlife protection in the Fort Belvoir Training Regulation.

- Classify open/undeveloped installation areas by their suitability for development and recreation based upon sensitivity and value to wildlife. This system would identify areas that would least harm Fort Belvoir's wildlife resources if they were to be developed and/or used for recreation.

17. Continue to coordinate with USFWS under the Sikes Act and the Fish and Wildlife Coordination Act. Continue to coordinate with VDGIF under the Sikes Act, and state wildlife regulations. Maintain wildlife handling and display permits from USFWS and VDGIF. Perform all reporting requirements of these permits.

18. Develop a recommendation for, and facilitate implementation of, a regional wildlife management consortium to include neighboring land managers.

19. Investigate the appropriateness of Fort Belvoir's participation in regional and national-level wildlife conservation programs, such as Partners in Amphibian and Reptile Conservation.

20. Continue to provide technical assistance for emergency situations, such as fire, that threaten wildlife resources.

21. Continue to respond to requests for technical information from on-post and off-post entities, as appropriate.

22. Continue to investigate and enforce violations of federal and state laws and regulations, as well as DoD, DA, and Fort Belvoir policies.